Guide to Technology Standardization

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ABSTRACT: This guide is a resource for Digital employees who are working with technology standards groups and consortia. It contains overview information on the forums of interest to Digital. It also explains who should be involved in standards forums and expectations of participants. This document is also available as EF-A1476-50. It is included in the SMC online documentation set as a convenience to those involved in standards.

APPLICABILITY: This manual is to be used by Digital employees who are involved, or plan to be involved, in standardization activities.

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Digital Equipment Corporation

Guide to Technology Standardization

Order Number: EF–A1476–50

October 1991

This guide is a resource for Digital employees who are working with technology standards groups and consortia. It contains overview information on the forums of interest to Digital. It also explains who should be involved in standards forums, what is expected of you if you participate in a forum, how to evaluate whether or not a technology should be standardized, and where and how to test for standards conformance. A glossary of terms and abbreviations is also included.

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Preface

This document provides guidelines for those involved in the technology standardization process and describes the standardization organizations and consortia of interest to Digital.

This version of the document focuses on software standards and standardization groups. The next version will add information about hardware standards and standardization groups.

Intended Audience

This document is an internal Digital document for engineering managers, marketing representatives, and other personnel interested in standards groups and consortia.

Document Structure

This guide is divided into two parts. Part I explains the following:

- Where to get help in Digital on technology standardization
- Who should be involved in standards forums
- What is expected of you if you participate in one of the forums
- Where and how you should test for standards conformance
- How to evaluate whether or not a technology should be standardized

Part II contains brief descriptions of standards groups and consortia of interest to Digital, appendixes, a glossary of abbreviations and terms, and an index.

Related Documents

For more information about standards, see the following:

Information Technology Standardization by Carl Cargill (Digital Press)

Open Systems Handbook: A Guide to Building Open Systems (EC-H1089-48)

In addition, information on standards is planned for availability in the corporate VTX infobase in early 1992. When available, the infobase will be announced in VTX Live Wire. The infobase will include the following:

- Who to contact in Digital about standards
- Company sponsors and members of standards groups and consortia
- Information on how to order copies of standards
- Standards newsletters
- Internal standards meetings
- Notes conferences
- Electronic mail distribution lists for standardization issues

To access the infobase when it is available, type the following at the command line prompt:

```
VTX CORP_STANDARDS
```

Part I

Introduction to Technology Standardization

This part contains six chapters with information as follows:

Chapter 1	Overview
Chapter 2	Standards Information and Resources
Chapter 3	Guidelines for Standards Committee Involvement
Chapter 4	Training Guidelines for Representatives
Chapter 5	Testing for Standards Conformance
Chapter 6	Submitting Technology for Standardization

Part II contains detailed reference information on standardization groups.

1
Overview

Since the late 1970s, interest in standards has significantly increased, while the standards process has become more complex. The influence of information technology (IT) users is key to these changes. IT users are strong supporters of standards, especially standards that ease the development of open systems and give users control over the technology.

This chapter provides an overview of technology standardization including information on the following:

- Standardization terminology and characteristics of standards
- Overview of standardization forums and consortia
- Benefits of standards
- Brief history of standards
- Description of Digital's involvement in standards

1.1 What Is a Standard?

A **standard** is a point of reference. It is an industry-accepted way of doing business that does not impede innovation or represent the narrow interests of any single vendor or user. Standards have been around for years. Common standards are the hour, the meter, and even the dollar, against which everything from barrels of oil to a silver ring are compared.

Standards are created for many reasons, including the following:

- Variety control
- Usability
- Compatibility
- Interchangeability

1.1 What Is a Standard?

- Health
- Safety
- Open, free-market competition
- Creating product demand

Standards in the IT industry are created by consensus. No one group can operate independently to create standards for the industry. If one group of providers creates a standard for which there is no user demand, it will fail. By the same token, if users create a standard that providers cannot or will not comply with, the standard will be equally unsuccessful.

1.1.1 Standardization Terminology

A formal standard, or **de jure standard**, is a clearly defined and agreed-upon convention. These standards are created by a formally recognized Standards Developing Organization (SDO), such as ISO, CCITT, X3, or IEEE, and developed under the rules of consensus in an open forum where anyone concerned has a chance to participate. Formal standards can be changed only through the consensus process, monitored by the SDO that created them. Examples of these standards are Open Systems Interconnection (OSI), Ethernet, POSIX, SQL, and most language and safety standards.

De facto standard is a term applied to an independently created product or system that captures a large market share, and that other providers tend to emulate, copy, or use to obtain some of that market share. De facto standards occur when the market believes that the solution provided by a single provider is superior to anything else on the market. Examples of de facto standards are DECnet, Network File Service (NFS), and PostScript.

The term **specification** describes hardware and software features. In the IT sector, specifications often are eventually approved as standards. Examples of specifications are the Digital DDIF and DTIF specifications, X Window System specification, OSF/Motif specification, and the *X/Open Portability Guide*.

Note About Abbreviations and Terms

For an explanation of other abbreviations and terms related to standardization, see the Glossary.

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1.1.2 Characteristics of Standards and Specifications

Formal and de facto standards and specifications can have one or more of the following characteristics: open, regulatory, government procurement, or voluntary. Table 1–1 describes these characteristics and includes examples.

Table 1–1 Characteristics of Standards and Specifications

Characteristic	Description	Creator and Maintainer	Examples
Open	A public specification that is maintained by an open, public consensus process to accommodate new technology over time, and that is consistent with international standards.[1]	SDOs and trade associations and consortia	Ethernet, POSIX, and OSI standards; OSF AES and X/Open CAE specifications
Regulatory	An operating requirement for a product. Nonadherence or violation of the standard can result in legal action.	Government, SDOs	Environmental and safety standards
Government procurement	A standard created by the government for product procurement.	Government	U.S. FIPS 151
Voluntary	A standard or specification that is market driven and supported by industries.	Independent vendors	PostScript

[1]IEEE P1003.0 *Guide to POSIX Open System Environment*

1.2 Standardization Forums and Consortia

There are several types of forums producing standards, as well as users groups and consortia creating specifications and lobbying for standardization.

Formal, de jure standards are created in formal standards developing organizations (SDOs). SDOs can be international, regional, or national organizations as explained in the following list and shown in Figures 1–1 and 1–2:

- International SDOs, which include organizations such as:
  - International Organization for Standardization (ISO)
  - International Electrotechnical Commission (IEC)

1.2 Standardization Forums and Consortia

  - Joint Technical Committee 1 (JTC 1), a joint ISO and IEC committee
  - International Telecommunications Union (ITU)
  - International Telegraph and Telephone Consultative Committee (CCITT)

  International SDOs are at the highest level for standardization. Their recommendations are recognized throughout the world. For more information on these groups, see Chapter 7.

- Regional SDOs, of which the most prominent are those working in Europe, such as:
  - Comité Européen de Normalisation (CEN) (the European equivalent of ISO)
  - Comité Européen de Normalisation Electrotechnique (CENELEC) (the European equivalent of IEC)
  - European Telecommunications Standards Institute (ETSI), a newly created group for telecommunications standards

  For more information on these groups, see Chapter 8.

- National SDOs, which include organizations such as:
  - Association Français de Normalisation (AFNOR)
  - American National Standards Institute (ANSI)
  - British Standards Institution (BSI)
  - Canadian Standards Association (CSA)

  Each SDO is an umbrella organization that manages the entire national standards effort. Most national SDOs are members of the ISO. Each group reflects the unique history and view of standards of the parent nation. For more information on these groups, see Chapter 9.

- ANSI Accredited Standards Organizations, which include the following groups:
  - Accredited Standards Committees (ASC X3 and ASC X12)
  - Computer Society of the Institute of Electrical and Electronics Engineers (IEEE)

  These groups develop standards for their area of concern. For more information on these groups, see Chapter 10.

1.2 Standardization Forums and Consortia

In addition to formal SDOs, the following organizations are also involved in standardization:

- Regional workshops, which include organizations such as:
  - Asia-Oceania Workshop (AOW)
  - European Workshop on Open Systems (EWOS)
  - NIST OSI Implementors' Workshop (NIST OIW)

  These groups are all concerned with Open Systems Interconnection (OSI) standards, and focus on the development of proposed draft International Standards Profiles (pdISP) for ISO. For more information on these groups, see Chapter 11.
- Consortia, associations, and user groups, which include many organizations such as:
  - Corporation for Open Systems (COS)
  - X/Open

  A consortium is an association or partnership of companies, vendors, or users united with a common cause. Consortia do not develop standards, but they can indirectly influence the standards process.

  Vendors have been active in forming consortia or industry groups to ensure that open systems and standards are developed and implemented to fit the needs of their customers. In some cases, users have also formed user groups to influence the standards process.

  Many of these groups try to define components, architectures, or applications environments, and some sort of testing suite to test conformance to their environment. In doing so, they use a mixture of de facto and de jure standards. The activities and focus of consortia and user groups varies depending on the membership. For more information on these and other consortia and user groups, see Chapter 12.

Figures 1–1 and 1–2 show the interrelationships between these groups.

1.2 Standardization Forums and Consortia

Figure 1–1 Organizations Working on IT Standardization

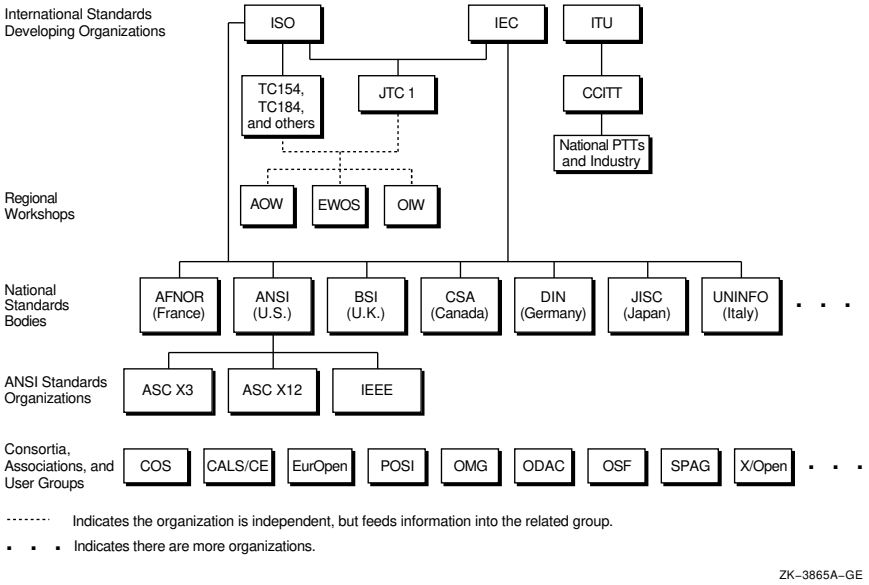
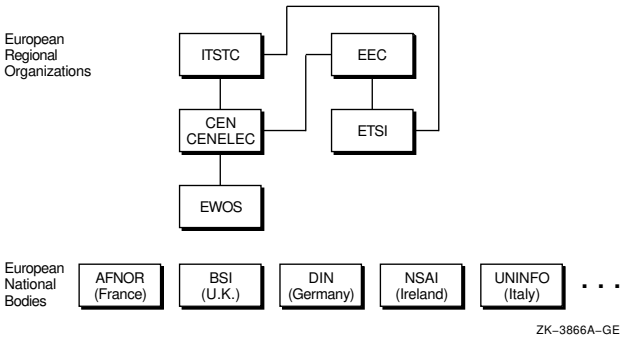


Figure 1–2 European Regional Standardization Organizations



1.3 Importance of Standards

Standards are change agents in the IT industry today because they are anticipatory, reflecting where the market is going, not where it has been. They are also a major source of expertise for future directions of the market and one of the few places where users can really impact the design cycle of major providers.

However, standards consume considerable resources. The IT industry has spent, by some estimates, as much as $4 billion on OSI standards alone, not including the OSI products. Standards also move slowly. Formal standards can take several years to finalize because of the complex processes of consensus and national debate to which they are subjected.

1.3.1 Benefits to Manufacturers and Vendors

Standards help manufacturers and vendors to create products, processes, and services that are more suitable for their intended purposes. They also spread knowledge of a technology and ease technical cooperation, remove regional barriers to trade, and help to reduce risks and costs. With standards, manufacturers and vendors have an opportunity to work on added value and gain a competitive edge in the market.

1.3.2 Benefits to Customers

Standards benefit customers in a multivendor IT environment because standards make it possible to have the following:

- Interoperability of systems in a networked environment
- Portability of applications and data
- Maximum return on investment through better software management and reduced training
- Better planning for evolution, upgrades, and managing change
- Clearer specifications for request for proposal definitions
- Less risk, standards are a form of insurance and a comparison metric
- More applicability of products and services

1.4 Evolution of Software Standards

Software standards have undergone a revolution over the last few decades, as described in this section. Figure 1–3 shows some of the standards developed over the past thirty years.

In the 1960s, most software standards were concerned with productivity issues, particularly in the programming languages. Customers were largely unaware of standards.

By the 1970s, connectivity issues began to surface with standards for OSI, Ethernet, and local area networks (LANs).

The 1980s brought a significantly increased interest in standards from manufacturers, vendors, and users, particularly in the area of portability of applications, data, and people. Standards emerged, such as SQL, graphics standards like Graphical Kernel System (GKS) and Programmer's Hierarchical Interactive Graphics System (PHIGS), and operating system standards like the Portable Operating System Interface for Computer Environments (POSIX).

With the 1990s, the focus is now turning to open standards for system interoperability, which already include standards such as the Open Document Interchange Format (ODIF), Electronic Data Interchange (EDI), Remote Procedure Call (RPC), and Standard Generalized Markup Language (SGML). Customers are beginning to demand standardized interfaces and capabilities. With the creation of fast-moving industry consortia, the standardization process is accelerating and becoming even more politicized.

Today standards are key to the direction and future of the IT industry.

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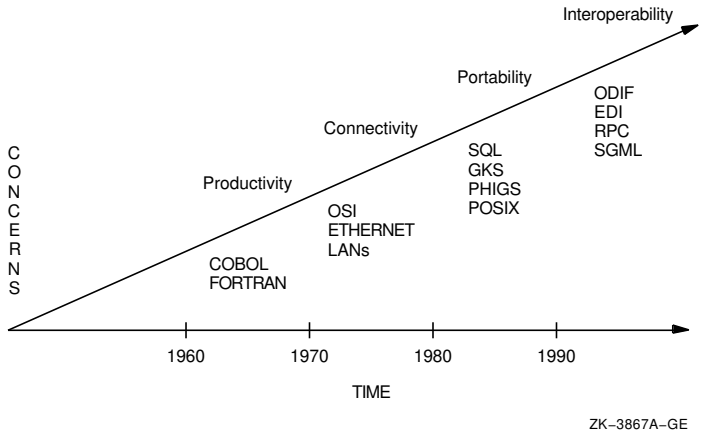
Figure 1–3 Changes in Language and Software Standards Concerns



1.5 Digital's Involvement in Standardization

Standards help Digital succeed in an increasingly competitive market. Good standards benefit both the company and its customers.

Digital participates in accredited standards committees that affect users of computing equipment. Representation helps to ensure that Digital maintains its reputation for being highly competent in the technical and management arena of standards. Digital employees worldwide actively work on more than 350 IT standards committees.

Digital also participates worldwide in numerous consortia, associations, and user groups.

Digital's involvement in standards varies depending on the effect the standard has on Digital's current or future products. Table 1–2 gives examples of how Digital leads some standards activities, implements standards, creates open specifications, and integrates technologies into products.

1.5 Digital's Involvement in Standardization

Table 1–2 Examples of Digital's Support of Standards

Digital's Involvement	Rationale	Examples
Leads standards activities	When conformance to standards is important to Digital. Digital is a key member of the group developing the standard.	Ethernet ISO/OSI IEEE POSIX
Implements standards	When it is necessary for Digital products to conform to market-driven, industry, or government standards.	C COBOL FORTRAN GKS PHIGS Open VMS systems SQL TCP/IP
Creates open specifications	When Digital has proprietary products that it wants standardized. Digital must support and maintain these specifications, but can change them as needed.	DECnet specification DECwindows/XUI VT/ANSI terminal
Integrates technologies	When Digital needs to add standards support to products, such as when Digital develops products to run on other operating systems.	MS–DOS NFS PostScript, SNA

2

Standards Information and Resources

The world of standards and consortia is a complicated one, due in part to multiple overlapping efforts in all of the areas in which Digital has interests. Digital itself is a complicated organization, with different individuals and organizations driven by differing goals. Therefore, it is important to work with other Digital groups to ensure that Digital presents a unified position.

This chapter provides information on resources where you can consult others and get help with standards and consortia-related activities.

2.1 Corporate Standards and Consortia (CSAC) Group

The Corporate Standards and Consortia (CSAC) group, formerly the Corporate Standards Group, is a focal point within Digital for coordination of standards and open systems issues throughout the corporation. CSAC is a worldwide organization with staff members in the United States, Europe, and North and South Pacific Rims. Many CSAC staff members have established influence in various standards and consortia groups both within their own countries and internationally.

The purpose of CSAC is to help ensure that Digital's business strategies are compatible with existing or evolving standards and conversely. CSAC implements, tracks, and manages Digital's major standardization strategies as defined by Digital's business managers. CSAC works with engineering, manufacturing, and marketing at all levels. CSAC can help create product strategies around standards; however, the engineering group has full responsibility for implementing the strategies, implementations, and certification of conformance.

2.1 Corporate Standards and Consortia (CSAC) Group

CSAC coordinates the following aspects of standardization:

- Formal standards through organizations such as ISO, IEC, ANSI, AFNOR, BSI, ECMA, and IEEE
- Cross-functional consortia standards through consortia such as OSF and X/Open
- Government standards
- Country-level activities and interests
- Standards testing and certification

You can consult CSAC for help in the following areas:

- Information on corporate standards strategies
- Coordinating standards strategies across internal and external organizations
- Marketing and training information, both internal and external
- Tactical advice
- Information, available through CSAC resources, such as:
  - Members in standardization organizations who are positioned on management- and steering-level committees
  - Standards and draft standards
  - List of participants in external standards activities
  - Guidelines for participation in standards and consortia activities
  - Standards newsletters and Notes conferences
  - Presentations and other marketing material

2.2 Internal Standards, Information, and Services (ISIS) Group

The Internal Standards, Information, and Services (ISIS) group is responsible for Digital internal standards. ISIS consists of three subgroups with the following responsibilities:

- Standards and Methods Control (SMC) is responsible for Digital internal standards and waivers processes, and for the policies and standards

associated with those processes. SMC offers both writing and publication services for Digital standards and related documentation.

- Chief Engineer's Office (CEO) is responsible for Digital's part identification system.
- Corporate Product Safety and Regulations (CPS&R) is responsible for ensuring that Digital provides safe products, meets legally mandated product safety requirements, and minimizes product safety liability.

2.3 Corporate Standardization Committees and Task Forces

There are many Digital committees and task forces of interest to those working on standards and consortia. The next sections contain overview information on each of the following internal committees and task forces:

- Corporate Standardization Steering Committee (CSSC)
- Corporate Standardization Program Review
- Domains Task Force (DOMTF)
- EDI Standards Task Force (ESTF)
- Internal Management Standards Focus meetings
- Multimedia/Hypermedia Standards meetings
- Open Systems Environment Task Force (OSETF)
- POSIX Meeting Preview
- Standards Technical Awareness meetings

For details on upcoming meetings or to schedule agenda time to discuss a topic of concern, check the standards section in the corporate VTX infobase for the contact person (see Section 2.4.3 for more information on the infobase).

2.3.1 Corporate Standardization Steering Committee (CSSC)

The Corporate Standardization Steering Committee (CSSC) organizes and executes the Corporate Standardization Program Review and coordinates the cross-functional activities of the following task forces:

- Domains Task Force (DOMTF)
- ISO Task Force (ISOTF)
- Open Systems Environment Task Force (OSETF)

- Public Sector Task Force (PSETF)
- Quality Task Force (QALTF)

The purpose of each task force is to review the corporate strategy previously developed or being promoted in the given area, to be a focal point for implementation of the strategy, and to serve as the center of expertise for standardization in the given area.

All task forces, except DOMTF and OSETF, are new. Therefore, only DOMTF and OSETF are discussed in detail in this section.

Participants in the CSSC include the task force convenors and selected members of CSAC, ISIS, and Corporate Quality. The CSSC meets at least two times each year.

2.3.2 Corporate Standardization Program Review

The Corporate Standardization Program Review is organized and executed by the CSSC. These review meetings highlight standardization activities throughout the corporation, in particular progress in the implementation of the strategic direction of standardization.

Meetings are held two times each year. Participants include Digital employees concerned with, or involved in, formal standardization and consortia activities (national, regional, or international), including the following:

- CSSC members and task force members
- CSAC, ISIS, and Corporate Quality staff members
- Engineering managers
- Product managers
- Marketing managers
- Senior staff

2.3.3 Domains Task Force (DOMTF)

The Domains Task Force (DOMTF) is a standards forum for the technical domain managers. The purpose of the task force is to coordinate the product requirements issues between the technical domains. Technical domains are established for the following areas:

- Product acoustics
- Electromagnetic compatibility (EMC)

- Product safety
- Product environmental requirements
- Product ergonomics
- Product labeling
- Regulated materials
- AC Power requirements
- Product nomenclature
- Quality assurance systems
- Telecommunications
- Waste management

Each domain is responsible for gathering the international requirements for the domain and communicating those requirements to the product development teams. DEC STD 066-1 contains additional information about the technical domains, including a list of Digital standards associated with each domain. The DOMTF meets at least two times each year.

2.3.4 EDI Standards Task Force (ESTF)

The EDI Standards Task Force (ESTF) was established early in 1990 to develop and drive the Digital Electronic Document Interchange (EDI) standards strategy on the basis of the conceptual model of EDI. ESTF is active in EDI-related industry and user groups including the following:

- UN/ECE EDIFACT, a United Nations group concerned with electronic data interchange for administration, commerce, and transportation.
- ANSI ASC X12, an ANSI accredited standards committee concerned with EDI standards.
- JTC1/SWG-EDI, an ISO/IEC joint technical committee working group concerned with EDI. This group was chartered by JTC 1 to develop a conceptual model for identifying and coordinating existing and future EDI standards and services.

Attendees represent both engineering and business groups concerned with EDI standards. Meetings are held once or twice each year, usually in the New England area and include teleconference access.

For more information on EDI, see the EDI Notes conference. For information on the location of this conference, check the standards section in the corporate VTX infobase (see Section 2.4.3 for more information on the infobase).

2.3.5 Internal Management Standards Focus Meetings

The purpose of the Internal Management Standards Focus meetings is to discuss technical issues related to system management standards that are being developed in committees in which Digital participates. Meeting participants do the following:

- Evaluate and coordinate Digital's participation based on the direction in which they would like to see the technology moving
- Consider the product strategy on which Digital's participation is based and agree on the tactics to use, such as written expert contributions and the significance of attending or not attending a given meeting (resource considerations)

The goal is to leverage Digital's limited, but coordinated, participation in the various forums to achieve the best possible results.

The Internal Management Standards Focus Meetings are open to anyone in Digital who participates in standards or standards-related groups dealing with management. Meetings are held about three times a year, or when technical issues warrant a meeting.

2.3.6 Multimedia/Hypermedia Standards Meetings

The multimedia/hypermedia technology area is an example where standardization is leading implementation. The main purpose of this forum is to keep Digital engineering groups informed of multimedia and hypermedia standards developments in the accredited SDOs as well as consortia work that may eventually be submitted to the SDOs. The forum also serves a place to exchange information on the activities of the many engineering groups that are involved with different aspects of this technology.

Multimedia refers to the property of handling several types of representation media. The forum is interested in the progress on standards for coding, compressing, and storing various forms of information representation.

Hypermedia refers to the explicit linking of presentation objects and elements. A principal focus of the group is the alignment and reconciliation of all the diverse elements of standardization into a process model that is compatible with Digital's software products. These cover such areas as compound documents, hypermedia applications, and interactive courseware.

Participation is open to all interested parties. Regular participants are drawn from Multimedia Engineering, Tools, and Database groups throughout the United States and Europe. Meetings are held every two months and include teleconference access.

2.3.7 Open Systems Environment Task Force (OSETF)

The Open Systems Environment Task Force (OSETF) was established in January 1989 as a software standards forum to provide tactical advice to engineering, product management, and marketing groups on their open systems standardization strategy. OSETF facilitates coordination and communication across organizations, provides wide support for standards and consortia-related proposals for open systems, and works with both de jure and de facto standards and specifications.

Some of the many forums of interest to OSETF are as follows:

- ISO JTC1 WG15
- IEEE POSIX
- X/Open
- NIST workshops and conferences
- Open Software Foundation (OSF)
- Various ECMA activities, such as PCTE
- Windowing forums, such as X3H3.6, X3V1.9, and IEEE 1201
- Selected X3 areas, such as C, Pascal, and Ada
- Forums required by NAS

OSETF is open to Digital employees who are dealing with standards-related software issues. Digital groups represented in OSETF include:

- Corporate Standards and Consortia (CSAC) group
- Government Systems Group (GSG)
- Open Systems Group (OSG)
- Network Application Support (NAS)
- Software Development Technologies (SDT)
- Software Quality Management (SQM)
- Networks and Communications (NaC)

- Transaction Processing (TP) and Data Management
- VMS Engineering

Meetings are held once a month, usually in the Greater Maynard area.

2.3.8 POSIX Meeting Preview

The POSIX meeting preview preceeds the formal IEEE POSIX meetings. The purpose of a preview is to:

- Identify the goals of the individual participants for that meeting
- Coordinate activities of Digital participants in the different committees

The participants in these meetings are Digital employees who are attending the IEEE POSIX meeting. In general, individuals, rather than particular institutions or companies, participate in the IEEE. Therefore, participants are representing themselves rather than Digital. These meetings do not give direction to the participants, but let them interchange ideas and viewpoints prior to the meeting of the committees.

These meetings take place quarterly and are synchronized with the IEEE POSIX meetings.

2.3.9 Standards Technical Awareness Meetings

The Standards Technical Awareness meetings provide an intensive look at what is happening in an area related to standards. It is an opportunity to see and hear what directions Digital and the competition are taking. The meetings consist of a series of presentations by the chairs or committee members for a particular area of discussion. This information exchange helps those working on committees to see how much their work overlaps that done by those on other committees. Most meetings are videotaped. For copies of the tapes, see the standards section in the corporate VTX infobase (see Section 2.4.3 for more information on the infobase).

These meetings focus on open systems standards. Past meetings have discussed OSF, X/Open, and POSIX.

The Standards Technical Awareness meetings are open to all Digital engineering and marketing employees. Meetings are held every six months to one year.

2.4 Additional Resources for Information

The following sections list resources for additional information on standards and on standardization groups.

2.4.1 Standards and Draft Standards

Many libraries and groups within Digital have information on standards. Table 2–1 contains information on standards available at some locations within Digital. These locations are often a source for answers to questions on standards as well as storing standards documents.

Table 2–1 Location of Standards Documents and Drafts

Location	Contents
CSAC Acton, MA (AKO1)	Selected documents dealing with various standards issues and industry standards, including ANSI, CCITT, ECMA, EIA, FIPS, IEEE, and UL
CSAC Australia (SNO)	Selected Australian and New Zealand standards
CSAC Geneva, Switzerland (GVO)	Selected CCITT, ECMA, and ISO working documents and standards
CSAC Reading, England	Selected standards on compliance issues
CSAC Turin, Italy (TRN)	CIM standards documents
Colorado Springs, CO (CXO3)	Selected industry standards
JR&DC Yokohama, Japan (JRD)	Selected ISO standards, in particular for ISO/IEC JTC 1, ISO TC 46, and ISO TC 176
Littleton, MA (LKG)	Networking and information technology standards
Marlboro, MA (MRO1)	Industry and military standards
Reading, England (Engineering Information Centre)	Selected standards collected in response to the requests from client engineering groups

(continued on next page)

2.4 Additional Resources for Information

Table 2–1 (Cont.) Location of Standards Documents and Drafts

Location	Contents
Silicon Valley, CA (USC)	Selected industry standards, and standards research and information services
Valbonne Engineering Library (VBO)	Full set of the CCITT Blue Book and selected industry standards
Corporate VTX infobase on internal standards (type VTX SMC)	Digital internal standards and guidelines, engineering and manufacturing specifications, and various internal manuals (maintained by the Standards and Methods Control (SMC) group)

For revisions to this table, check the standards section in the corporate VTX infobase (see Section 2.4.3 for more information on the infobase).

Digital has a copyright license agreement with ISO that allows distribution of copies of certain ISO standards within Digital. These standards must be used to prepare Digital products or publications. The Standards Information Centre in Geneva, Switzerland receives copies of all ISO International Standards and draft International Standards produced by the following ISO Technical Committees:

- JTC 1 Information Technology
- TC 43 Acoustics
- TC 46 Information and documentation
- TC 68 Banking and related financial services
- TC 154 Documents and data elements in administration
- TC 159 Ergonomics
- TC 176 Quality management and quality assurance
- TC 184 Industrial automation system

The Geneva office puts the copyright agreement warning on the standards and makes them available through the Digital Library system.

2.4.2 Standards and Consortia Newsletter

The Standards and Consortia Newsletter, started in April 1989, is published monthly by the Corporate Standards and Consortia Group. It contains articles on software standards-related topics, summaries of meetings and trip reports, and general information on upcoming standards events. To have your name placed on the mailing list, check the standards section in the corporate VTX infobase for the person to contact (see Section 2.4.3 for more information on the infobase).

2.4.3 Information Available in the Corporate VTX Infobase

Standards information that is subject to frequent change will be available in the corporate VTX infobase in early 1992. An announcement of its availability will be made in VTX Live Wire.

The VTX infobase on standards will include information, such as:

- Who to contact in Digital about standards
- Company sponsors and members of standards groups and consortia
- Information on how to order copies of standards
- Standards newsletters
- Internal standards meetings
- Notes conferences
- Electronic mail distribution lists for standardization issues

To access the infobase when it is available, type the following at the command line prompt:

```
VTX CORP_STANDARDS
```

3

Guidelines for Standards Committee Involvement

Because standards work is becoming critical to Digital's success, it is important that Digital have a significant presence in major forums and be represented by people who represent Digital's best interests. This work can no longer be relegated to a junior engineer with responsibility for merely keeping abreast of standards activities.

This chapter provides guidelines for the following:

- Selecting representatives for standards work
- The role of representatives at meetings and on committees
- Legal guidelines

The guidelines in this chapter replace those formerly documented in the *Manual for Corporate Standards Representatives*.

3.1 Selecting Representatives for Standards Work

A representative for standards or consortia work should be a principal engineer or higher, or a manager. Standards work should always be given to people who can best represent Digital and compete with high-ranking representatives from other corporations. The chosen person should also have the following qualifications:

- Be knowledgeable about Digital technology and processes
- Be knowledgeable about the business and the strategy of the sponsoring engineering organization
- Be capable of influencing and negotiating effectively
- Have excellent communication skills, both speaking and listening

3.1 Selecting Representatives for Standards Work

- Have leadership skills
- Have the time to do the related work; representatives are expected to do more than just attend meetings

Standards work should be treated as a primary activity by engineering and marketing, and should not be sacrificed in budget cutbacks. Representatives should be recognized for their valuable contribution to the corporation.

Representatives should also be given time to do the job. Standards work requires a significant time commitment. Representatives must review documents, attend meetings, write trip reports, write resolutions and proposals, and perform other tasks. The time commitment increases with each of the following levels of involvement:

- Representative
- Technical editor
- Committee chair

New representatives should be encouraged to contact Digital employees who have past experience as standards representatives. These people can share experiences, answer questions, and provide advice as needed. For a list of current representatives, see the standards section in the corporate VTX infobase. For more information on the infobase, see Chapter 2.

3.2 Attending Meetings and Doing Committee Work

The Corporate Standards and Consortia (CSAC) group recommends that any Digital employee attending any standards meeting do the following:

- Write and circulate a trip report after each meeting and copy CSAC and interested employees
- Be familiar with the guidelines in this chapter
- Use CSAC's infrastructure to obtain coordination across Digital

3.2.1 What to Expect at Meetings and on Committees

Digital has a significant presence in many of the administrative committees of the standards bodies and consortia. In some cases, Digital's goals and strategies differ from those of other participating companies. In these cases, competing interest groups or individuals strive for power and leadership.

Success in standards meetings depends upon the following:

- Composition of the group

  Attendees at standards and consortia meetings consist of people from a wide variety of companies and countries. Representatives sometimes speak different native languages. To be successful, these people all have to work together. They must be persuaded and influenced on the value of technical proposals so they can vote intelligently on them.

- A good chairperson who has the following qualities:
  - Respects and values processes
  - Maintains neutrality
  - Ensures that every opinion is heard and understood (this is particularly important when there is a language difficulty)
  - Is an expert in the rules for running meetings and knows how to use them
  - Has strong interpersonal skills in influencing and negotiating
  - Knows how to work issues outside the formal part of meetings
- Attendees' personal behavior
- Coordination through CSAC

The last two attributes are explained in greater detail in the following section.

3.2.2 What Is Expected of You at Meetings and on Committees

As a representative for Digital, you must present and defend Digital's positions in your committee, and have no public disagreements with other Digital representatives or public Digital positions.

Digital has a strategic plan by which it moves. You must understand the plan and the role that your group and standards committee play in it. You must also understand the importance of the relevant technology to Digital, where compromises can be made, and the impact of the compromises on your

3.2 Attending Meetings and Doing Committee Work

organization and on Digital. CSAC can provide information on Digital's overall plans and tactical advice.

To be a successful standards representative, you must do the following:

- Have integrity. When necessary, state your position and be consistent in it.
- Make a reasonable effort to influence the standard to agree with Digital's position, but be ready to compromise to the consensus of the group. Know in advance how much you can compromise. If you must make a decision to vote for incompatibility with Digital's products, discuss this decision with the responsible product group and with CSAC before any vote, or if unavoidable, abstain from voting.
- Expect the unexpected on agendas. If caught unprepared, be careful not to make hasty decisions. Use delay tactics to allow time to ask for help.
- Do not let personal objectives overshadow good judgment and company positions. Also, recognize that people are often torn between personal opinions and those of their organization.
- Try to have fun, make friends, and build relationships. Alliances can shift over time, but relationships can span these shifts. Standards work can be interesting and good training for other work.
- Try to understand each viewpoint; respect all representatives. Recognize when it is better for Digital to agree than to disagree. Work issues outside the formal part of meetings when appropriate.
- Be knowledgeable; read the draft documents in advance. Volunteer to write up resolutions and position papers.
- Be aware of the results of indecisiveness. If your committee tarries, one of the following results might occur:
  - The technology can become obsolete. When a standard is too slow to emerge, companies develop countermoves.
  - A proposed standard can become a standard by default. Major companies can implement part or all of the draft standard, and it can get so much momentum that change becomes impossible.
- Attend meetings consistently.
- Plan for your own replacement representative — seek out and train understudies.

3.2.3 Meeting Agendas

Always assume there are hidden rationales for agenda items in every meeting, including:

- What gets on the agenda
- When items are considered
- Whether a faction will cause a lack of consensus to develop
- What positions people take
- Who gets on committees
- Who the technical reviewers are

Consider these factors before each meeting and come prepared.

3.2.4 Balloting Guidelines

Ballots can be corporate (one company, one vote) or individual. This depends on the forum. Corporate ballots must always be reviewed by the appropriate Digital staff because the vote is stating a Digital position. Review is also strongly advised for individual ballots.

Use the following guidelines for balloting:

- Make sure you are in the balloting group (in some forums, being in the working group does not ensure balloting privileges).
- Find out who is in the balloting group (this list may be useful during balloting).
- Be careful of common reference ballots when allowed by a forum. When a group of people have common objections, they can condense these objections as one objection and submit them as one ballot. Common reference ballots are theoretically a way to reduce redundant ballots. Practically, they are a powerful political tool. Common reference ballots may collapse votes within a company or a voting block.
- Cite ballots carefully and beware of hidden agendas. Cite by listing your exceptions, and then add substantive addenda.

3.3 Legal Issues

Digital's participation in industry consortia and standards bodies can result in many benefits to Digital and its customers. There are, however, some antitrust risks that may be associated with these activities.

It is Digital's policy to comply fully with the antitrust laws of the United States and the other countries in which Digital operates. The most serious antitrust violations involve agreements among competitors that restrain competition. Activities that are legal in one country may create legal risks in another country if competition there is adversely affected. As a result, it is particularly important that you understand the legal risks associated with activities that require close interaction with competitors, including participation in industry consortia and standards and standards bodies.

Some industry consortia and standards bodies are organized as corporations or membership associations. Others may be less formal. These guidelines should help you understand how participation in any type of industry consortia and standards activities may raise antitrust risks.

You must avoid even the appearance of improper conduct. If you have a question about the legality of your activities, immediately contact the Digital Law Department. CSAC can provide contact names.

These guidelines do not address questions of technology disclosures or the more complex legal issues that accompany the formation of industry consortia and standards bodies. It is important that you consult the Digital Law Department and CSAC prior to disclosing technology information or joining or participating in the formation of a new industry entity.

3.3.1 Legal Guidelines for Committee Participants

Committee participants on standards and consortia must adhere to the following legal guidelines:

- Do not make agreements that Digital will use consortia technology or adopt a standard.

  The technologies licensed and standards established by private organizations should provide alternatives to a broad range of competitors. It is generally not appropriate for a consortium or standards organization to require participants to use a particular technology, purchase a particular product, adhere to a standard, or to take actions to enforce compliance.

Even though Digital might support use of a technology or the creation of a particular standard, you should never enter into an agreement with another entity or group that obligates Digital or others to use consortia technology or adopt a standard. Digital's decisions to use or incorporate consortia technology or a standard into products must remain unilateral decisions of Digital.

- Do not agree to discriminatory standards or discriminatory access.

  Standards should always be considered on their technical merits and should not be adopted for the purpose of foreclosing competition or excluding a competitor from access to the market. Standards should not favor one competitor or a group of competitors over others. Participation in the creation or enforcement of standards in a manner intended to reduce competition may subject Digital to liability.

  Antitrust risks may also be created if the technologies or products developed by industry consortia are not available to members and nonmembers alike on a nondiscriminatory and commercially reasonable basis.

- Consult with the Digital Law Department and CSAC before participating in any joint or coordinated submission to a standards group or consortia.

  Standards organizations and industry consortia are usually carefully structured to assure an open process for the submission of proposed specifications or technologies for acceptance by the body. Under some circumstances, joint or cooperative submissions by two or more companies may reduce competition and inappropriately circumvent the organization's review and decision process.

- Avoid product discussions with competitors.

  The activities and meetings of standards organizations and industry consortia provide opportunities for competitors to communicate. It is important that you confine all discussions with competitor representatives to the legitimate business of the standards organization or consortia and do not let discussions "spill over" into discussions of competitive relationships. You should be careful to avoid any discussions with competitors relating to product pricing, terms of sale, profit margins, distribution practices, unannounced products, the selection of vendors, or the amount of a bid or an intention to submit a bid.

3.3 Legal Issues

Be sure to have technical grounds for all arguments, and minimize mention of specific Digital products. You are responsible for keeping informed of which Digital products are confidential.

3.3.2 Resources for Legal Information

For more information on legal requirements, refer to:

- Digital's Corporate Law Department
- Corporate Policy Memorandum 85-1, "Antitrust Compliance and Communication with Competitors"
- Digital's *U.S. Antitrust Compliance Guide*

4

Training Guidelines for Representatives

To be a Digital representative for standards and consortia groups, you must have experience working at Digital, and an understanding and acceptance of the Digital network and culture. In addition, you must have excellent skills for working with people, presenting ideas, effecting change, and accomplishing results.

This chapter outlines a suggested training program to develop the communication and leadership skills required of standards representatives.

4.1 Liaisons with Other Digital Representatives

In addition to taking the training courses described in this chapter, representatives should also establish a liaison with one or more Digital representatives currently involved in standards activities. This liaison will help new representatives get a feel for the workings of standards bodies, the Digital expectations of representatives, and hints on how to handle specific issues. This liaison will be as valuable as the training program in preparing representatives. For a list of current representatives, see the standards section in the corporate VTX infobase. For more information on the infobase, see Chapter 2.

4.2 Training for Internal Standards Work

Training is available on Digital internal standards in the form of both a video and a presentation kit. For more information on who to contact, see the corporate VTX standards infobase under Digital Internal Standards Representatives. For more information on the infobase, see Chapter 2.

4.3 Training Program for External Standards Work

The training program described in this chapter is a set of courses available to Digital employees that focuses on the required skills for successful standards representatives. The courses are available from the following organizations:

- Digital Management Education (DME) — courses offered at various Digital sites
- National Training Laboratory (NTL) Institute — headquartered in Alexandria, Virginia with courses offered at various locations in the United States

These courses are not offered as a program. You must sign up for each course individually.

The training program is designed primarily for people who want to become involved or who are now involved as representatives in standards groups and consortia.

The training program helps you to understand roles within the organizations and the value of these roles, to master the skills needed for success, and to be more effective as representatives. It also teaches you to be able to integrate change and stabilize it, to understand how to value others' ideas, and to be more flexible. The skills learned are useful not only in standards work, but in most work within Digital.

The suggested courses use the following teaching methods:

- Group projects
- Lectures
- Readings
- Simulations and group exercises

4.4 Recommended Courses

Table 4–1 lists the required skills for standards and consortia representatives and the recommended courses for development of those skills. Course descriptions follow this table.

Table 4–1 Required Skills and Recommended Training

Skills	Recommended Courses	Source
Communication Skills – Speaking – Listening	Human Interaction Laboratory Communication Skills Effective Presentations I	NTL[1] DME[2] DME
Leadership Skills – Knowledge of dynamics – Responsibility – Ability to motivate	Positive Power and Influence Power in Personal and Organizational Life	NTL DME
Influencing and Negotiating Skills – Diplomacy – Influencing – Negotiating	Influencing Effectively	NTL

[1]NTL (National Training Laboratory Institute)

[2]DME (Digital Management Education)

4.4.1 Human Interaction Laboratory

Source National Training Laboratory (NTL)
Length 6 days
Description Teaches you to:

- Gain insight into the dynamics of everyday communications with others and to fine-tune your personal style of interaction to become more effective
- See and feel how different communication styles bring different results
- Learn to select the appropriate style
- Practice methods of influencing and motivating others
- Learn the effects of your behavior on others
- Develop and practice a positive personal presence
- Manage individual and group conflict productively
- Gain an understanding of how differences affect your relationships and behaviors

4.4 Recommended Courses

4.4.2 Communication Skills

Source Digital Management Education (DME)
Length 3 days
Course Number EY-1263E
Description Teaches you to:

- Identify barriers and gateways to effective communication in yourself and others
- Identify the strengths and weaknesses of various communication styles and their impacts on others
- Choose an appropriate style of communication for different situations
- Communicate more effectively by using techniques such as questions, assertions, paraphrasing and reflecting, and by managing mixed messages and conflict, and by giving and receiving feedback
- Be aware of skills that require additional practice and feedback
- Convey an image of strong and effective leadership
- Build high performance work teams and secure the motivation and commitment of others

4.4.3 Effective Presentations I

Source Digital Management Education (DME)
Length 2 days
Course Number EY-1265E
Description Teaches you to:

- Identify factors to consider when preparing for a presentation
- Identify the basic elements of an effective presentation
- Identify effective delivery techniques, including verbal and nonverbal communication and the use of visual aids
- Deliver more effective presentations

4.4.4 Positive Power and Influence

Source Digital Management Education (DME)
Course number EY-6196E
Length 4-day workshop
Description Teaches you to:

- Achieve a high level of personal effectiveness — get things done through others, have your ideas adopted, and motivate people
- Identify and refine your personal influence strategies and skills
- Build up underused or unknown skills
- Establish a personalized strategy-analysis, planning, and follow-through plan for exerting positive influence in diverse settings

4.4.5 Power in Personal and Organizational Life

Source National Training Laboratory (NTL)
Length 5 days
Description Teaches you to:

- Deal more knowledgeably and effectively with the dynamics of power and influencing power as an organizational fact of life
- Focus energy on gaining results that are reasonable
- Respond creatively and purposefully when faced with disagreement or opposition

4.4.6 Influencing Effectively

Source National Training Laboratory (NTL)
Length 5 days
Description Teaches you to:

- Differentiate between invited and imposed influence situations, and to plan your strategy accordingly
- Assess a situation and increase the readiness to change of the person or persons to be influenced
- Fit various styles of influencing to different situations
- Stabilize the change

4.5 For Registration and Other Information

For more information:

- On Digital Management Education (DME) courses, check the VTX DME infobase by entering the following at the system prompt:

  ```
  VTX ESCOURSES
  ```

  VTX contains information on current DME schedules, more complete course descriptions, and information on how to register.

- On National Training Laboratory (NTL) Institute courses, contact:

  National Training Laboratory (NTL) Institute
  1240 North Pitt Street, Suite 100
  Alexandria, Virginia 22314-1403
  Telephone: 1 (800) 777-LABS

5

Testing for Standards Conformance

Testing for standards conformance is vital to ensure that products adhere to the strict definition of a standard. Customers, users, and producers of IT goods and services all benefit from product testing.

This chapter includes the following:

- A definition of conformance testing and types of certification
- Information on how to document standards conformance in product SPDs
- Information on how and where to get products tested

5.1 Conformance Testing

Conformance testing means testing an application or an implementation to determine whether or not it meets standards requirements. The true test of standards conformance is whether the application or implementation does what it is supposed to do in the specified environment. Some standards define conformance and clearly state what it means to claim conformance to that standard.

A variety of organizations, including governments and consortia (such as COS, OSF, and X/Open), have developed test suites to test product implementations for conformance to standards. Vendors use these test suites to help verify conformance to standards. When a system passes an organization's test suite, the testing laboratory indicates whether the system complies or conforms to the standard, and issues a certification mark or document if appropriate. Compliance and certification are defined as follows:

- **Compliance**. Compliance indicates that a product, process, system, or service was tested against a test suite and passed, but the product has not been certified. Test suites do not always test everything. A product can comply with the test suite, but not conform to a standard because compliance to that standard was not tested.

5.1 Conformance Testing

- **Certification**. Certification adds a level of confidence above that provided by compliance. A certification mark or document certifies that a product, process, system, or service passed a compliance test. An accredited testing laboratory performs the testing. Some programs allow suppliers, such as Digital, to receive accreditation as a testing laboratory. Digital is an accredited testing laboratory for COS, TCP/IP, and US GOSIP, and is working on accreditation in other areas. Digital sees first-party testing (by suppliers) as appropriate and cost effective.

  The next sections discuss the following types of certification:

  - COS Mark
  - NIST certification of conformance (FIPS 151-1 certification)
  - U.S. GOSIP certification
  - X/Open brand
  - NAS certification (proposed)
  - OSF brand (proposed)

5.1.1 COS Mark

The COS Mark is issued by the Corporation for Open Systems (COS). Vendors with COS marked products warrant that they will resolve any interoperability problems between their product and other COS marked products. If a problem exists that a vendor cannot resolve on a technical level, COS provides an Interoperability Analysis Service (IAS) to help resolve the problem.

To apply for and receive the COS Mark, a Digital engineering organization must do the following:

1. Contact an accredited laboratory, such as the Digital NPACE OSI laboratory in Littleton, Massachusetts (LKG). For more information on NPACE, see Appendix A.
2. Complete the application form for testing by that laboratory.
3. Give the laboratory a Protocol Implementation Conformance Statement (PICS) and Protocol Information eXtra Information for Testing (PIXIT) for each protocol implemented.

The laboratory will test the product and work any issues with COS. If the product qualifies for the COS Mark, COS will issue it and add the product to its register of conforming products.

5.1.2 NIST Certificate of Conformance

The National Institute of Standards and Technology Computer Systems Laboratory (NIST/CSL) issues a certification of conformance to the Federal Information Processing Standard (FIPS) 151-1. FIPS 151-1 codifies the United States Government profile of the IEEE POSIX 1003.1-1988 standard.

NIST/CSL has developed a test suite called NIST-PCTS that is used to determine the conformance of an implementation to the FIPS. This test suite is available to anyone, but only an Accredited POSIX Testing Laboratory (APTL) can run the test for certification purposes. Another branch of NIST, the National Voluntary Laboratory Accreditation Program (NVLAP) administrates the laboratory accreditation. APTLs run the test suite against a client's implementation and formally report the results to NIST/CSL. If the implementation passes the test suite, NIST/CSL issues a certificate of conformance.

5.1.3 U.S. GOSIP Certification

The Government Open Systems Interconnection Profile (GOSIP) is a cross-section of functional applications belonging to the OSI environment. The purpose of U.S. GOSIP is to coordinate the acquisition and operation of products by the United States Federal government. U.S. GOSIP is specified by the Federal Information Processing Standard (FIPS) 146.

U.S. GOSIP has eight registers that contain information for conformance and interoperability testing. These registers include information such as the following:

- Valid GOSIP test suites
- Valid means of testing, such as test system name, hardware and operating system platform, and protocols
- Registered test laboratories (Digital has a registered laboratory)
- Conformance tested GOSIP products
- Interoperability test suites for OSI products
- Reference entities (one implementation that has successfully passed conformance testing and meets the selection criteria specified) to be used for interoperability testing

5.1 Conformance Testing

- Interworking GOSIP products that have been tested against the reference entity
- Interoperability test and registration services

To test products for conformance to U.S. GOSIP specifications, the following steps must be completed by an accredited test laboratory:

- Successful conformance testing using a registered means of testing. Successful testing qualifies the product for inclusion in the *Register of Conformance Tested GOSIP Products*.
- Successful interoperability testing against a registered reference entity. Successful testing qualifies the product for inclusion in the *Register of Interworking GOSIP Products*.
- Successful interoperability testing with other compatible products through the use of a recognized methodology (one that is listed in the *Register of Interoperability Test and Registration Services*).

To test for U.S. GOSIP conformance and interoperability, a Digital engineering organization must do the following:

1. Contact an accredited laboratory, such as the Digital NPACE OSI laboratory in Littleton, Massachusetts (LKG). For more information on NPACE, see Appendix A.
2. Complete the application for testing by that laboratory.
3. Give the laboratory a Protocol Implementation Conformance Statement (PICS) specifying functionality supported in the implementation for each protocol in the stack.
4. Give the laboratory a Protocol Information eXtra Information for Testing (PIXIT) for the stack/substack.
5. For stacks that build on substacks that have been previously U.S. GOSIP conformance tested, provide evidence of registration for the previously tested functionality.

The laboratory will test the product and work any issues with GOSIP. If the product qualifies for GOSIP conformance, NIST will add the product to its register of conforming GOSIP products.

5.1.4 X/Open Branding

The X/Open brand verifies that a product conforms to the X/Open Portability Guide (XPG). For a product to receive an X/Open brand, the product must conform to specifications, pass the applicable verification tests, and the applying company must enter a trademark license agreement with X/Open. Only X/Open can issue the X/Open brand.

Use the following process to apply for and receive the X/Open brand:

1. Develop an X/Open conforming product.
2. Have the product tested at an accredited X/Open laboratory that uses the Verification Suite for X/Open (VSX) or an applicable test suite.
3. Contact X/Open for a branding kit, which includes application forms, a trademark license agreement, a conformance document template, and instructions on how to brand a product.
4. Apply for waivers, if any. You can apply for waivers at any time during the development of a product. If, for example, you find an area you believe is undefined or unclear in the XPG, you can apply for a waiver while you are developing the product. Temporary (implementation) waivers are valid for one year from the date the waiver is issued, not from the date the product is branded.
5. Resolve waiver issues with X/Open. X/Open issues a waiver reference number.
6. Submit the branding application to X/Open with test logs or certificates (if applicable), waiver reference numbers, the conformance document, application fees, and other information requested on the form.
7. Work any issues with X/Open.

When this process is complete, X/Open issues the branding certificate and adds the product to its register of branded products.

5.1.5 NAS Certification Program (Proposed)

Digital is currently exploring a NAS “seal” that would certify conformance and interoperability of NAS platforms and applications. The objectives of the NAS certification program are as follows:

- To establish the NAS environment throughout the industry and user community as a recognized, dependable application environment that

allows for integration, interoperability, and portability of applications and users

- To enable application and platform vendors to communicate clearly to potential customers that their products correctly implement the NAS specifications when installed in the associated environment or correctly interoperate with the NAS environment
- To establish the NAS environment and the "seal" together as a trusted, dependable, and widely used purchasing tool

5.1.6 OSF Branding Program (Proposed)

The Open Software Foundation (OSF) is currently defining a branding program for their Application Environment Specification (AES). Because the OSF AES is based on the X/Open Portability Guide (XPG), the OSF AES brand, when available, would imply that a product satisfies the requirements for the X/Open brand. However, only X/Open can issue the X/Open brand.

5.2 European Conformance Program

In Europe, accredited testing laboratories test IT products to verify their conformance to standards. Certification bodies then certify products on the basis of the test results. Each European country mutually recognizes test reports and certificates issued by other European countries. Third-party certificates and manufacturers' declarations of conformity are also recognized.

The European Committee for IT Testing and Certification (ECITC) was established to give member states confidence in European laboratories and certification bodies. ECITC is composed of national representatives of the European Community member states and the European Free Trade Association (EFTA) countries, who are designated by the national members of CEN/CENELEC and the telecommunications administrations. This committee coordinates the national activities to ensure compatibility and mutual recognition of reports and certificates issued by member nations.

Testing and certification bodies work with ECITC and the following groups to ensure agreement:

- Open Systems Testing Consortium (OSTC), which is responsible for wide area network (WAN) testing, such as with message handling systems, Teletex, FTAM, and OSI networks

- European Testing and Certification for Office and Manufacturing Protocols (ETCOM), which is responsible for testing manufacturing message specifications, directory services, network management, and elements of local area networks
- European Testing of Electromagnetic Compatibility of Information Technology Products (EMCIT), which includes responsibility for telecommunications testing

The National Measurement Accreditation Service (NAMAS) is a group in the United Kingdom that accredits European test laboratories. It is similar to the National Voluntary Laboratory Accreditation Program (NVLAP), which accredits test laboratories in the United States. The Digital Networks Performance and Conformance Engineering (NPACE) group is working to establish a NAMAS accredited testing laboratory in the United Kingdom for U.K. GOSIP approved testing.

5.3 Digital's Position on Conformance and Certification

The following are principles that Digital believes the IT industry should adhere to, and which should be the start of any discussion on conformance and certification:

- Conformance to standards is a requirement for achieving portability of assets and interoperability of IT systems.
- The standard on which conformance tests are based is always the final authority in defining conformance. That is, incorrect test criteria should never be a basis to a conformance claim or certification.
- There is a requirement for conformance testing to these standards that ensures that conformance has a common meaning.
- The standards from which conformance tests are derived should be international consensus standards as a first choice, with other consensus standards as a second choice.
- Conformance criteria should be based on International Standardization Profiles (ISPs) as a first choice. If an ISP is not available, conformance criteria should be based on implementors' agreements at one of the regional workshops: Asia-Oceania Workshop on Open Systems (AOW), European Workshop on Open Systems (EWOS), or NIST OSI Implementors' Workshop (OIW).

- There must be only one Abstract Test Suite (ATS) that all test tools implement. This ensures consistency of testing worldwide. Ideally, the ATS is an ISO standard, but because of the lengthy ISO standardization process, there are not many ISO ATSs. ATSs that have been harmonized among the workshops, AOW, EWOS, and OIW are a good second choice.
- Providers should have the right to include the conformance test as an integrated part of the provider's development or manufacturing process.
- The *Manufacturer's Declaration of Conformance* should be an accepted statement of conformance, thereby allowing manufacturers to base a conformance claim on a previously tested technology.
- Testing organizations should accept liability for their testing activities, thereby ensuring the customer that the certificates of conformance issued are rigorous in their methodology and have substantial meaning.
- There must be reciprocity of test results and mutual acceptance of tests on the part of all concerned.
- All conformance and certification schemes should be examined for economic and technical feasibility and economic justification before being implemented.
- Interoperability (IOP) certification schemes should not be added to existing conformance certification schemes because of the increased costs.

5.4 Standards Documentation in Product SPDs

You must take care when documenting conformance or compliance to standards in Digital's Software Product Descriptions (SPDs). The SPD is the document that embodies the warranty for the particular software product. That is, Digital warrants that the software conforms to the SPD. If the SPD states compliance with standard *x*, then Digital is warranting compliance.

To decrease legal risks in SPDs,

- Put statements about standard conformance or compliance in sales brochures and catalogs rather than in SPDs
- Always qualify compliance statements with disclaimers such as:
  - "To Digital's knowledge this product conforms with standard *x*, but Digital is not providing a warranty for such conformance."
  - "This product complies with standard *x* as tested using the *xyz* test."

Note that these are general guidelines. The legal representative for the product group can advise the product managers on whether modifications to the wording can be made.

5.5 How and Where to Get Products Tested

Digital performs rigorous testing on its products. This testing emphasizes the value Digital places on having reliable, conformant, standards-based products.

Digital has three testing laboratories for product testing:

- Networks Performance and Conformance Engineering (NPACE)
- Systems Integration Engineering (SIE)
- Systems Quality Management (SQM)

The Digital testing laboratories do one or more of the following tests:

- Performance and verification
- Standards conformance
- Multivendor interoperability

In addition, the laboratories develop test tools and test suites as needed.

The Digital testing laboratories do not do system testing or quality assurance testing. The submitting group must resolve all problems prior to submission. The laboratories do not necessarily check to see whether a product installs correctly, is well documented, or whether it works as documented.

The key advantages of using Digital's testing laboratories are as follows:

- Increased confidentiality

  By testing products internally, Digital does not expose its products to inspection by external organizations before they are ready. Despite claims of confidentiality, there have been innumerable instances of leaks about various vendors passing (or failing) specific tests.

- Uniqueness

  There are no known facilities outside Digital that provide performance design analysis and modeling.

- Speed

  Testing is faster when done within Digital, and engineering can control the schedule.

5.5 How and Where to Get Products Tested

For more information on the Digital NPACE, SIE, and SQM testing laboratories, see Appendix A.

6

Submitting Technology for Standardization

The decision to submit technology for standardization is based on many factors. This chapter explains some of the business considerations for standardization, including the following:

- What to consider when planning a standardization strategy
- How to determine the costs and returns from a standardization effort
- What steps to follow to submit a technology

6.1 Standardization Strategy

A standardization strategy must include the following:

- A technical and business plan

  The plan should identify product areas where Digital wants to achieve leadership, products that have parity, and those that do not. It should also specify product differentiators that make leadership products, such as earliest availability, added value that customers want (for example, new and revised functionality, increased performance, ease of use), and layered products and services.

- Flexibility to change tactics

  Engineering and marketing groups need an infrastructure that supports change and better use of metrics and milestones.

- Effective standards marketing

  Customers need to be made aware of the value of particular standards and which Digital products and services conform to standards. Digital needs to be recognized for its leadership in standards work.

In addition, when Digital is trying to have its technology accepted as a standard, it must use marketing to establish market demand. Customer education must communicate the requirements that the potential standard is intended to meet and the capabilities of the proposed Digital solution.

6.1.1 Factors to Consider When Planning to Standardize

All projects are potential candidates for standardization. It is a business decision whether or not to standardize and when to do so.

If a product development group decides to develop and implement a standardization strategy, the following nontechnical factors are important to success:

- Current methods and values that support standards

  For example, consider standards when gathering and prioritizing requirements, carefully evaluate whether or not upward compatibility is critical, and place value on developing both standardized products and innovative products.

- Internal processes that support time-to-market requirements
- Public commitments (which set customer expectations) that have management support and strategic funding
- Plans for managing volume business

  Standards help create markets, and Digital must be able to take advantage of the increased market size.

- Business models (cost and revenue predictions) that show the impact of standards activity

  Internal processes and managing costs become a primary competitive factor in volume business.

- A well-coordinated marketing program

  Marketing is an important part of promoting a technology for standardization. A well-coordinated marketing program can help you achieve the following results:

  – Create market demand for your technology. You must educate the market in two areas: what the problem is that your technology addresses and why your technology is the best possible solution.

- Establish the perception in the market that your product is the "winner."
- Promote Digital's commitment to openness.

It is essential that the marketing program be implemented as part of the overall standardization strategy. If you wait until your technology is accepted to do marketing (or damage control if your technology is rejected), it might be too late. Your technology might be the best in the world, but you have lost the battle if another vendor's technology is perceived as better or "more open." CSAC can help you work with your marketing support organization to define a marketing program that fits with your standardization strategy.

6.1.2 Factors to Consider When Deciding Not to Standardize

If the decision is made not to standardize, Digital must still monitor relevant industry efforts for their impact on Digital's technology. Engineering product development groups must manage projects as though they were candidates for standardization, and establish engineering processes that can support change and flexibility.

In addition, the decision not to standardize must be examined from a business perspective. The following are some of the reasons why standardization is not included in product plans:

- No perceived increased value

  The most common reason not to standardize is that the standard offers no perceived increased value to a product. This is an increasingly difficult position to defend, given the market trend towards open systems. Conformance to standards is becoming a significant product requirement.

- Increased costs to schedule and product complexity

  Another factor frequently considered is the increased engineering cost to include standards due to the increased time to market and profitability, or due to the increased product complexity.

- Product lifecycle

  The life of product might be a consideration. A product with a short lifetime or a mature product might not require standardization, as long as it does not fit into a system that requires standard interfaces.

All of these factors must be balanced against the expected loss of market share with nonstandard products and the increased cost of sales. Sales representatives must spend more time trying to sell nonstandard solutions.

6.1.3 Considerations When Submitting Existing and Emerging Technology

When submitting technology for standards, you must consider the impact according to whether the technology is existing or emerging.

If the technology is existing and has many layered products designed with that technology, such as FORTRAN, the standards approach is to be very defensive of the technology. That is, the submitting group wants the standards group to agree that their technology is the best. If the technology does not win, there can be a significant cost impact to services, solutions, applications, and layered products designed for that technology.

If you are proposing a major change to an existing standard, be sure to have a contingency plan for scaling back the proposed changes. Changes to an existing standardized technology or a standard must not dramatically change the standard. All revisions to standards have an unstated requirement to be backwards compatible. Lack of backwards compatibility leads to major disruptions of the standardization process.

If you are submitting an emerging technology, such as the OSF Distributed Computing Environment (DCE) for example, the approach is more flexible. With DCE, there were few applications written with this technology, so protecting the investment was not an issue. The key in this case was to gain market share and displace other technologies. A shared win with another company and company alliances were more acceptable.

If a new technology does not win, it is not a total loss. When submitting new technologies, a company can show the layered applications that the company can build with the winning technology. The company then has an opportunity for future volume business and incremental revenue from the layered applications when built with the winning technology.

Table 6–1 summarizes the objectives for submitting existing and emerging technologies.

Table 6–1 Objectives of Submitting Technologies for Standardization

Technology	Objective	Benefits of a Standards Win
Existing	Be the chosen technology. Cost avoidance.	Reduced reinvestment costs for existing products.
Emerging	Be perceived as the leading technology. Gain market share.	Opportunities to inspire the target market to use your technology.

6.2 Determining the Costs of a Standards Effort

The objective of analyzing costs is to identify the absolute costs that must be attributed to standards activities. You can then use these costs to identify the costs and benefits of the standards effort. The percent of standards effort to the base engineering effort is an indicator of the investment requirements for standardizing that technology.

The cost of a standardization effort includes both engineering and functional costs. The following sections explain these costs.

See Appendix B for worksheets to use to estimate the costs of a technology submission for both individual components and an entire program.

6.2.1 Engineering Costs

When planning to submit technology for standardization, you must consider costs for the base technology, incremental engineering, and reengineering as follows:

- Base technology costs

  These include all direct engineering costs to build a product on all platforms, exclusive of any standards activity and commitments. These costs are required of all products whether linked with standardization activities or not.

- Incremental costs

  These include all direct engineering costs for supporting standards efforts, such as the following:

  – Participation in standards bodies and consortia (organizational fees, administration, and legal costs associated with joining and participating)

  - Incremental time cost for the program if testing and certification of the product is required for the standardization effort
  - Partnerships and relationships to provide joint or cooperative technologies
  - Programs initiated specifically to comply with standards requirements
  - Special packaging for submitting technology to a standards forum
  - Special packaging of the product
  - Vendor licensing
- Reengineering costs

  These include all direct and indirect costs for changing an existing technology to conform to a standards requirement, including reengineering costs for the following:

  - Base technology: All direct engineering costs to change an existing technology to conform to a standards requirement.
  - Layered products: All layered product costs to change an existing technology to conform to standards requirements. Costs might include such things as programming changes, and rebuilding, testing, and redistributing the product.
  - Field readiness: All costs to prepare the field to sell to and support customers as they migrate from an existing technology to a standards-based technology. Costs include sales and service training, consulting, and migration and conversion programs.
  - Backward compatibility: All costs for ensuring that the current customer base or current Digital products can migrate from existing technologies to a standards-based technology. Costs might include creating dual application programming interfaces (APIs), reengineering layered products (porting to new platforms, testing, distributing with a new interface), reengineering service and field readiness, and other programs to migrate the customer base.

6.2.2 Functional Costs

Functional costs for submitting technology for standardization include costs for product management, documentation, marketing, and training. These costs mirror the engineering costs. That is, for functional costs, you must consider the same categories of costs as for engineering:

- Base technology costs to build the base product
- Incremental costs to support the standards effort such as special documentation or marketing, sales training, special programs to comply with standards requirements, and special packaging
- Reengineering costs to change an existing technology to conform to a standards requirement

6.2.3 Justifying Incremental Costs

The incremental cost category for both engineering and functional costs pertains to standards activities costs and standardization (including testing and certification). You must analyze these costs, but it is difficult to cost-justify them for the following reasons:

- Standards and standardization are expensive. The cost of driving a single technology set to standardization is similar to the cost of delivering a new, incompatible version of that technology.
- Standards and standardization are an investment. They might have no short-term, direct, measureable return.
- Standardization is at the opposite end of the spectrum from research and development. You must plan standardization work along with investments in new technology, including investments in third parties. You must also fund and manage standardization work as you would research and development.

6.3 Analyzing Returns

It is much easier to estimate costs than returns. However, you must carefully weigh both costs and returns when making a decision whether or not to standardize. If a decision is made not to standardize based solely on the costs, Digital is likely to miss out on market opportunities and other benefits of standardization.

6.3 Analyzing Returns

You can classify the return from standardization efforts into three categories:

- Direct return
- Indirect return
- Strategic return

The following sections explain these returns. Appendix D compares the returns from a submission to the Open Software Foundation (OSF) with a submission to the Object Management Group (OMG).

6.3.1 Direct Return

Direct returns from acceptance of Digital technology for standardization include the following:

- Royalties and patents

  Royalties are often available for software code and sometimes for specifications. Digital can obtain royalties for its technologies only in informal standardization organizations, such as consortia and user groups. Royalties are not generally acceptable in formal standards organizations.

  Patents provide legal protection. They can be used in both formal and informal standards organizations, provided the patent is made widely available at a reasonable fee.

  A vendor-licensing agreement is used to specify royalties and patents. Fees can be a one-time fee or a fee for each use of the licensed product (code, specifications, documentation, and other forms).

- Increased Net Operating Revenue (NOR) for products and services

  Fees from the royalties and patents provide additional revenue without increased engineering costs.

6.3.2 Indirect Return

Indirect returns for submitting technology for standardization include the following:

- Market creation

  Market-creation returns are the most difficult to estimate. When a standard is created and given the right promotion, users begin to buy and demand products that meet that standard. This creates a new market for those products.

The POSIX 1003.1 standard is a good example of market creation. This standard created a new market for POSIX-compliant systems as opposed to UNIX-based systems. This has currently provided the only alternatives to government procurement of UNIX-based systems, thereby creating the basic open system marketplace.

The IBM PC is another example of market creation.

- Potential sales creation

  Compliance with standards or standardization can open markets that would be closed if a product is noncompliant. Many governments use standards as a base for their procurement specifications. Noncompliance to a mandated standard closes these markets, while compliance allows the product to be submitted to these agencies.

- Cost avoidance

  When Digital's technology is adopted as all or part of a standard, Digital avoids excessive reengineering costs to make products conform to that standard.

- Leverage of layered products and applications

  Customers buy computer systems to solve problems. Thus, applications that run on customer's systems generate sales.

  Application writers prefer to build applications on standardized interfaces. If Digital's technology becomes the basis of a standard, this gives Digital the lead in quickly moving applications to that product.

  If application writers adopt a standard that is not implemented by any Digital product, Digital runs the risk of having no products or incurring the costs of modifying existing products or developing new products.

- Indirect dominance

  When Digital's technology becomes the basis for a standard, Digital gains a time advantage over other vendors who must then reengineer their products.

6.3.3 Strategic Return

Strategic returns for submitting technology for standardization include the following:

- Improved vendor relations, partnerships, and alliances

  Good vendor relations are important for future development of products and standards. Successful submissions to some consortia groups, such as the Open Software Foundation (OSF), usually involve a partnership with other vendors.

- Positive company image

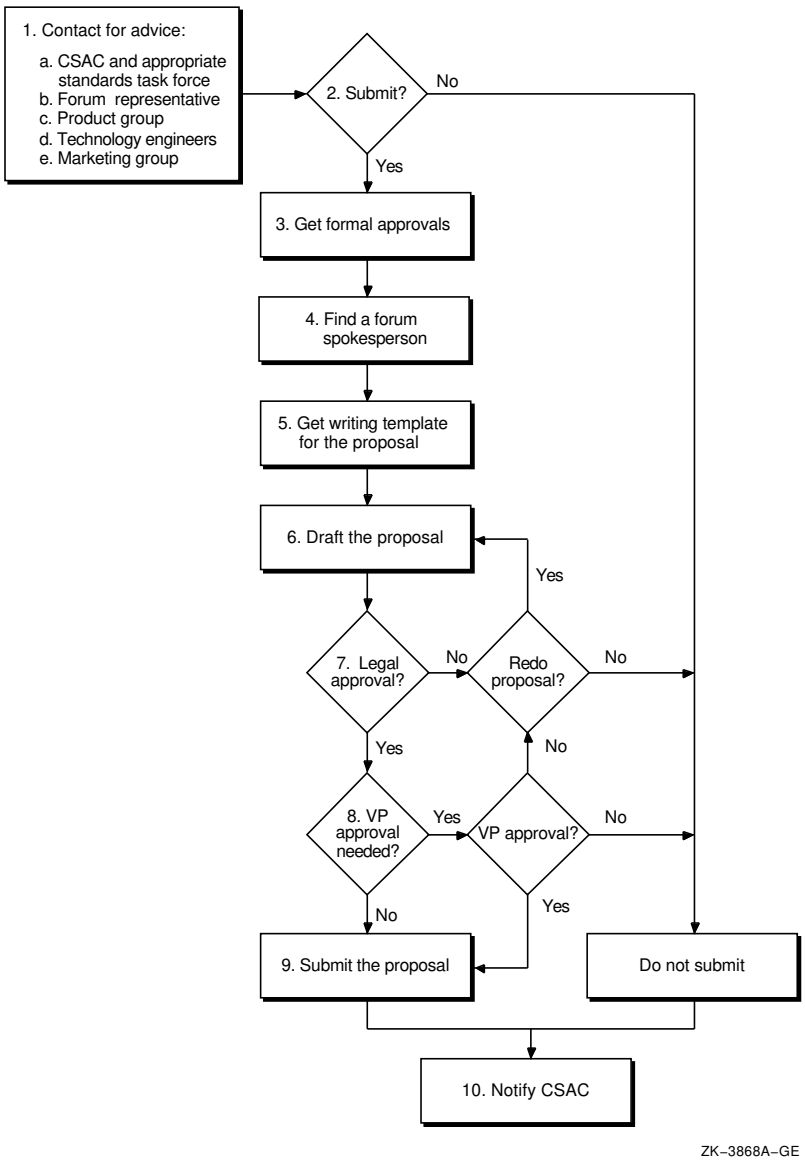
  When Digital's technology becomes the basis for a standard, Digital gains recognition from customers and application writers who look to Digital for future innovation. For example, Digital is recognized today as a technology provider of open products. To gain the fullest in this area, marketing must ensure that customers and application writers know that Digital is a leader in setting standards, that many standards today are based on Digital's technology, and that Digital's products implement standards.

6.4 Digital's Procedure for Submitting Technology for Standardization

This section includes a step-by-step flowchart explaining how to plan for a technology submission to a standards group or consortium. Complete the steps shown in Figure 6–1 and explained in the list that follows. Each numbered step matches the step numbers in Figure 6–1.

6.4 Digital's Procedure for Submitting Technology for Standardization

Figure 6–1 Steps for Submitting Technology for Standardardization



6.4 Digital's Procedure for Submitting Technology for Standardization

1. Contact the following groups for advice:
   a. Corporate Standards and Consortia (CSAC) group and the appropriate standards task force for your given area:
      - Domains Task Force (DOMTF)
      - ISO Task Force (ISOTF)
      - Open Systems Environment Task Force (OSETF)
      - Public Sector Task Force (PSETF)
      - Quality Task Force (QALTF)

      Schedule an agenda item for a future task force meeting to explain the technology to be submitted. Task force and CSAC members will advise you on the approach to take, such as:
      - Whether or not it is appropriate to submit the technology.
      - Which forum is the most appropriate for the technology submission.
      - Which other groups in Digital might be affected by your plans.
      - Whether to submit the technology as a new work item in an already established working group or as a new technology. Submitting it as a new technology requires the forum to establish a new working group to discuss it.

   b. The Digital representative to the forum (either directly or through CSAC). Discuss the following issues:
      - The importance of the forum work to the Digital technology.
      - The importance to Digital of submitting the technology to the forum.
      - Whether the forum might propose something else that could contradict implementation.
      - Which engineering groups need to be informed of the standardization work.

   c. The product group involved with the technology.
   d. The engineers working on the proposed technology.
   e. The marketing group responsible for the technology.

6.4 Digital's Procedure for Submitting Technology for Standardization

Consulting these groups ensures that Digital is working together as a team and all members are fully aware of the approach being taken and its rationale.

2. Decide as a group whether or not to submit the proposal. If you decide not to submit, notify CSAC of your decision and the reasons behind it.
3. If you decide to submit, get formal approval from the engineering manager and product manager to submit the technology.
4. Find a spokesperson to drive the technology within the standards group or consortia. That person might be someone in the engineering organization or it might be an impartial spokesperson, such as a Digital customer or someone in the Digital Research Group. If the technology must be defended or if the technology is accepted and the group starts creating a standard, someone in the engineering organization is best.
5. Get information on the documentation standards for that forum, such as the template for the document format (type of heads, whether or not to use line numbers, footnotes, and so on). The Digital representative to the forum can provide this information. If you use the appropriate documentation standards, you reduce the likelihood that the forum will edit your document and make changes to its content.
6. Write a draft of the proposal or problem statement. Conditionalize all proprietary information. You might want to have one document for internal use and another for submission to the forum. Add copyright information to the document to ensure that Digital gets recognition for the proposal. Write a letter authorizing the forum to copy and extract information from the document.
7. Contact the Digital Law Department for approval to submit. If you do not get legal approval and you decide not to submit, notify CSAC of your decision and the reasons behind it.
8. Get the approval of the engineering vice president (if needed). If the product is proprietary (not in the public domain), you must get vice presidential approval.
9. Submit the proposal to the standards forum.
10. Notify CSAC of the submission or nonsubmission. CSAC ensures corporate-wide coordination and can provide help through their influence in the external standardization world.

Part II

Reference Information

This part contains six chapters with reference information on standardization groups as follows:

Chapter 7	International Standards Development Organizations
Chapter 8	European Standards Organizations
Chapter 9	National Standards Bodies
Chapter 10	ANSI Accredited Standards Organizations
Chapter 11	Regional Workshops
Chapter 12	Consortia, Associations, and User Groups

This part also contains appendixes, a glossary, and an index.

Figures 2 and 3 show the interrelationships between the groups discussed in Part II. Note that for each category in the following figures, there is a chapter in Part II for discussion of those groups. For example, Figure 2 shows the international standards developing organizations at the top; these are discussed in Chapter 7. The European regional organizations in Figure 3 are discussed in Chapter 8. The national standards bodies shown in Figure 2 are discussed in Chapter 9 and so on.

For information on who to contact in any organization included in Part II, see the standards section in the corporate VTX infobase. For information on the infobase, see Chapter 2.

Figure 2 Organizations Working on IT Standardization

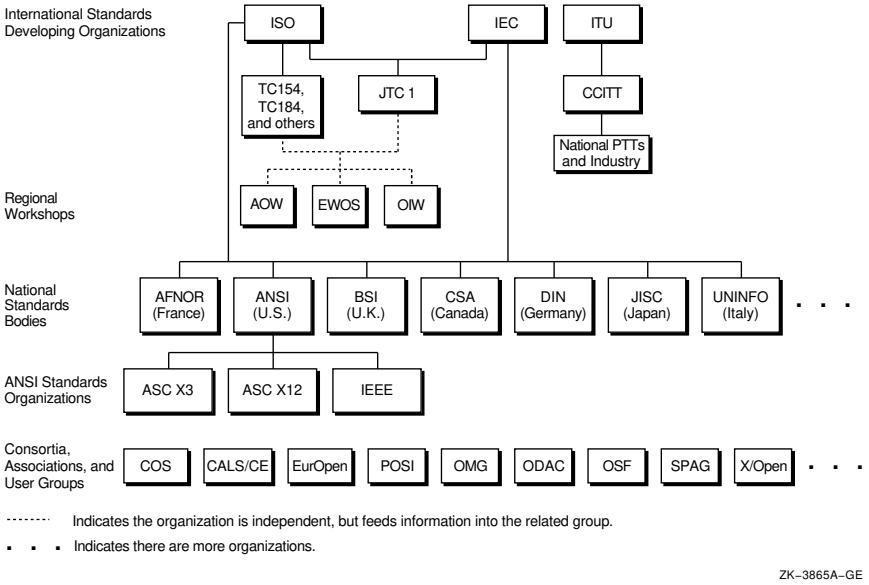
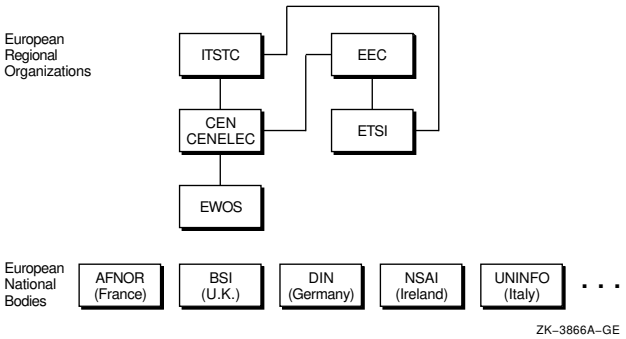


Figure 3 European Regional Standardization Organizations



7

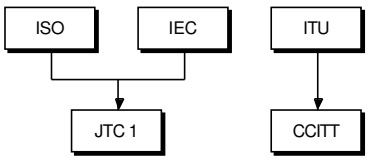
International Standards Development Organizations

This chapter contains information on the following international standards development organizations:

- International Electrotechnical Commission (IEC)
- International Organization for Standardization (ISO)
- International Telecommunication Union (ITU)
- International Telegraph and Telephone Consultative Committee (CCITT)
- Joint Technical Committee (JTC 1)

Each of these organizations uses a form of voluntary process to produce standards or recommendations, and has a distinct, although sometimes overlapping, area of interest and activity.

The following figure shows the interrelationship of these organizations:



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International Electrotechnical Commission (IEC)

Overview

Type of Group:	International standards development organization
Mission:	To establish standards in the electric and electronic fields
Headquarters:	Geneva, Switzerland
Established:	1906
Membership:	Open to national members who represent both the interests of their countries, and the interests of users, manufacturers, trade associations, government, and academic associations within their countries.
Digital Involvement:	Participates on technical committees. The American National Standards Institute (ANSI) represents the United States interests in the IEC.
Voting:	By ballot of all members. A 20 percent negative response defeats a proposal.

Description

The International Electrotechnical Commission (IEC) has equal status with the International Organization for Standardization (ISO). However, ISO represents all industries; the IEC focuses only on electrical and electrotechnical matters, particularly the areas of electricity measurement, testing, use, and safety.

Goal

The key goal of the IEC is to produce specification standards that indicate a range of acceptable features that products must conform to or be tested against. These standards range from definitions of terms, such as amp and ohm, to specifications for interoperability.

Deliverables

The key products of the IEC are the specification standards.

International Electrotechnical Commission (IEC)

Process

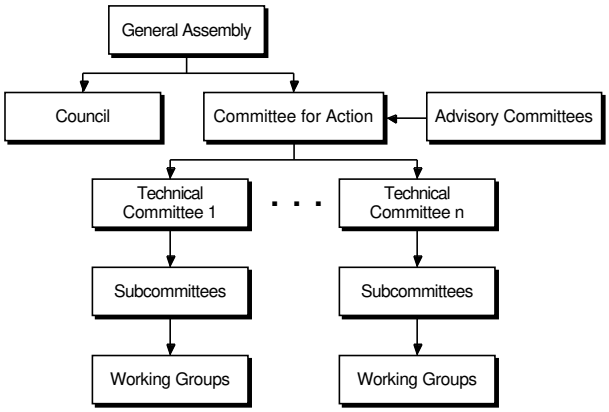
Technical committees create draft standards that are then subject to voting by all members. If 20 percent of all votes are negative, the proposed standard is rejected. A rejected standard can be revised and recirculated for voting.

Organization

The IEC organization consists of a General Assembly, Council, Committee for Action, technical committees, and subcommittees. The Committee for Action is the focus for communication. It is responsible for acting on technical requests for standards and allocating them to technical committees and subcommittees for action. Three advisory committees advise the Committee for Action.

The IEC uses technical committees to create its standards. There are about 80 technical committees, each of which can have subcommittees. Some subcommittees also have working groups. Each technical committee and subcommitte has a Secretariat. Each member nation can belong to each technical committee.

The following figure shows an overview of the IEC organization:



International Electrotechnical Commission (IEC)

For More Information

International Electrotechnical Commission
Central Office
3, Rue de Varembé
Case Postale 131
CH-1211 Geneva 20, Switzerland

International Organization for Standardization (ISO)

Overview

Type of Group:	International standards development organization
Mission:	To promote international standardization
Headquarters:	Geneva, Switzerland
Established:	1946
Membership:	Open to national standards bodies as full voting members. The American National Standards Institute (ANSI) is the United States voting member in the ISO. International or broadly based regional organizations can get liaison status, but do not have a vote.
Digital Involvement:	Participates in technical committees representing national bodies.
Voting:	By national standards bodies

Description

The International Organization for Standardization (ISO) has a broad focus, making it the leading standards organization in the world. ISO standards range from information-processing systems to boilers and pressure vessels. The ISO has standards authority in all but two areas:

- Telecommunications, which is the responsibility of the International Telecommunication Union (ITU)
- Electrical and electronic engineering, which is the responsibility of the International Electrotechnical Commission (IEC)

  ISO and IEC standards efforts are becoming more intertwined because information technology and electronic engineering are more closely related. The ISO/IEC Joint Technical Committee 1 (JTC 1) was formed by the merger of ISO TC97 and IEC TC47B and TC83 technical committees to allow work to jointly occur on information technology standards.

International Organization for Standardization (ISO)

Goals

The key goals of ISO are as follows:

- To develop international standards
- To facilitate the international interchange of goods and services
- To encourage cooperation in economic, intellectual, technological, and scientific endeavors

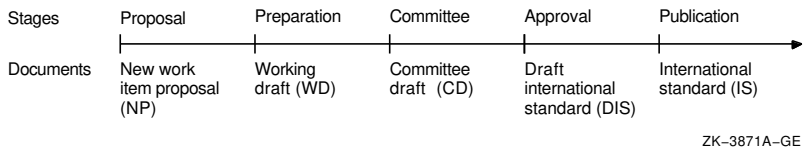
Deliverables

The ISO has developed over 6700 international standards. In 1990, ISO published 570 standards. The following committees are developing standards of interest to Digital:

- ISO/IEC Joint Technical Committee (JTC 1) on Information Technology, which produces over one third of ISO's output. For more information on JTC 1, see the section devoted to JTC 1 in this chapter.
- Technical Committee 184 (TC184), which focuses on computer integrated manufacturing standards.
- Technical Committee 154 (TC154), which focuses on standardization of documents and representation of data used for information interchange within administration, commerce, and industry. TC 154 is responsible for the EDIFACT standard. In the United States, the EDI national committee is ANSI X.12.

Process

A standards proposal passes through five stages before becoming an ISO International Standard, as shown in the following figure:



International Organization for Standardization (ISO)

Organization

In the ISO organization, the General Assembly makes all policy decisions on the recommendation of the Technical Board, Council, and Executive Board. The technical committees (TCs) are the heart of the ISO. Each major topic for standardization is assigned to TC, which usually subdivides into subcommittees and working groups.

For More Information

International Organization for Standardization
Central Secretariat
1, Rue de Varembé
Case postale 56
CH-1211 Geneva 20, Switzerland

International Telecommunication Union (ITU)

Overview

Type of Group:	International organization of telecommunications providers, now a special agency of the United Nations (UN)
Mission:	To promote international cooperation among all members so that all nations, both rich and poor, have access to telecommunication services
Headquarters:	Geneva, Switzerland
Established:	1865
Membership:	Open to all member nations of the UN; the State Department is the United States member.
Digital Involvement:	Industrial member
Voting:	By national delegations

Description

The International Telecommunication Union (ITU) is a formal international treaty organization for telecommunication services. One of the many functions of the ITU is the development of both radio and telecommunications regulations and standards. The regulations are binding on all members who are signatories to them; the standards are voluntary.

Goals

The key goals of the ITU are as follows:

- To maintain and extend cooperation in the development and use of telecommunications
- To promote the development of technical facilities to improve the efficiency of telecommunications
- To harmonize the actions of nations to attain these two goals

International Telecommunication Union (ITU)

Deliverables

The key deliverables of the ITU are as follows:

- Regulations for radio, telegraph, and telephones
- Recommendations for standards, tariffs, administrative directives, and terminology
- Documents on telecommunications matters

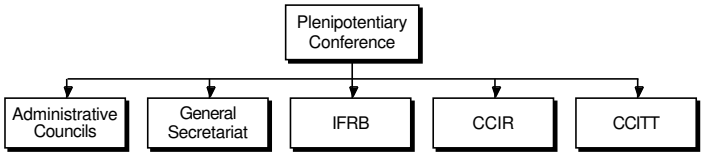
Organization

In the ITU, the Plenipotentiary Conference sets broad policies and objectives, called the Articles of Convention, and oversees the election of the administrative councils. The administrative councils meet annually to deal with administrative matters. The Plenipotentiary Conference meets every five to nine years.

The ITU has four permanent committees:

- General Secretariat
- International Frequency Registration Board (IFRB)
- International Radio Consultative Committee (CCIR)
- International Telegraph and Telephone Consultative Committee (CCITT) — the organization of importance to Digital

The following figure shows the ITU organization:



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International Telecommunication Union (ITU)

For More Information

More information about ITU is available in the *Telecommunications Journal*, a monthly ITU publication produced in Geneva. The ITU headquarters is located at:

International Telecommunication Union
Place des Nations
CH-1211 Geneva 20, Switzerland

International Telegraph and Telephone Consultative Committee (CCITT)

Overview

Type of Group:	Formal international standards group
Mission:	To develop standards (called Recommendations) for end-to-end performance, interconnection, and maintenance of the world networks for telecommunications, including telephone, telegraph, and data communication
Headquarters:	Geneva, Switzerland
Established:	1956; CCITT is the consolidation of previous organizations.
Membership:	Open to all member nations of the United Nations who are usually represented in the CCITT proceedings by the National PTT (Postal, Telegraph, and Telephone) Organization. The United States is formally represented by the State Department. More limited participation is open to the following groups: • Recognized private operating agencies (about 58 members) • Scientific or industrial organizations (about 146 members) • Major international organizations, including standards groups, such as the IEC and ISO; and user groups, such as INTUG (International Telecommunications User Group) (about 36 members)
Digital Involvement:	Observer at committees; provides technical participation and input when requested.
Voting:	Only PTT administrations can vote. Digital, as a scientific or industrial organization, can send papers and participate in the working groups that draft the Recommendations, but cannot vote.

International Telegraph and Telephone Consultative Committee (CCITT)

Description

The International Telegraph and Telephone Consultative Committee, also known as Comité Consultatif International de Télégraphique et Téléphonique (CCITT), is one of four permanent or specialized groups within the ITU. CCITT is responsible for drafting the recommendations that enable communications to take place between public telecommunications services. CCITT activity ranges from integrated digital networks to the equipment connected to public networks. It does not cover private data networks.

There is an increasing tendency toward joint development of CCITT Recommendations and ISO standards in those areas of overlap between the two organizations (largely between CCITT SG VII and ISO/IEC JTC 1).

Goal

The primary goal of the CCITT is to develop CCITT Recommendations and technical and operating documents for worldwide telecommunications.

Deliverables

The key deliverables of the CCITT are telecommunications standards, published every four years in the CCITT colored Books of Recommendations.

Process

The CCITT does the bulk of its technical work in study groups (SGs). There are usually about 15 SGs, but this number varies depending on the work being done in a given study period (four years). The SGs are subdivided into working parties whose work is determined by the questions for study determined by the Plenary Assembly. The Plenary Assembly, which meets every four years, has the power to accept or reject the final recommendations made by the study groups. The four-year cycle of study is under review for change.

Organization

The CCITT is a permanent committee of the ITU. SG VIII, data communications networks, has the following projects of interest to Digital:

- Q.18 X.400 MHS security and X.435 EDI over X.400
- Q.19 Distributed applications security
- Q.20 Directories security

- Q.24 OSI management security
- Q.27 Security for OSI layers 3 and 4

For More Information

More information about CCITT is available in the CCITT Books of Recommendations, particularly Volume 1, and also from the CCITT headquarters at:

Comité Consultatif International de Télégraphique et Téléphonique
Place des Nations
CH-1211 Geneva 20, Switzerland

Joint Technical Committee 1 (JTC 1)

Overview

Type of Group:	Joint standards committee of ISO and IEC on information technology
Mission:	To develop standards for technology, not applications of technology
Headquarters:	New York City (the secretariat for JTC 1 is held by ANSI)
Established:	The ISO started work on Information Technology standardization around 1960. However, the centralization of the ISO and IEC Technical Committees into JTC 1 occurred in 1987.
Membership:	Open to national delegations that are accredited by national member bodies.
Digital Involvement:	Vice chair of JTC 1, convenor of SC22/WG15 POSIX and SC22/WG18 FIMS, various technical editor and secretarial roles, and also on many of the JTC 1 subcommittees. The Corporate Standards and Consortia (CSAC) group owns responsibility for JTC 1 within Digital.
Voting:	By member body

Description

The Joint Technical Committee (JTC 1) is a central body for information technology standards. It is a joint effort of the International Organization for Standardization (ISO) and the International Electrotechnical Committee (IEC). JTC 1 represents the interests of vendors, users, and government organizations.

Participants in the JTC 1 are national delegations appointed by the national member bodies, such as the following:

- ANSI (United States)
- AFNOR (France)
- BSI (United Kingdom)

- CSA (Canada)
- DIN (Germany)
- ITSCJ (Japan)
- UNINFO (Italy)

Digital submits its ideas and exerts its influence through these member bodies.

There are two components of the JTC 1:

- JTC 1 committee

  This is a group of 50 to 60 people who meet to manage the JTC 1 organization and work direction, and the work allocation among the JTC 1 subcommittees. Digital participants on this committee represent the positions of their national member body.

- JTC 1 subcommittees and working groups

  There are 18 subcommittees (SC) and a large number of working groups (WG) for each SC. Subcommittees are numbered. For example, JTC1/SC22 is the subcommittee working on languages and POSIX. Digital participants on these subcommittees and working groups represent national interests for one of the member nations in which Digital resides.

The Special Group on Functional Standardization (SGFS) is part of the JTC 1 committee. SGFS was initiated in 1987 to create a process for developing a new kind of standards document, the functional profile. The SGFS also accepted a new kind of liaison group, called the S-liaison. These are implementor and user groups who develop, harmonize, and submit International Standardized Profiles (ISPs) to the JTC 1 process. The major S-liaisons at this time are the following three regional OSI workshops:

- Asia-Oceania Workshop (AOW)
- European Workshop on Open Systems (EWOS)
- NIST OSI Implementors' Workshop (NIST OIW)

The SGFS has issued TR10000, *The Framework and Taxonomy of International Standardized Profiles*. TR10000 defines the context for the development and processing of ISPs. ISPs have the same status worldwide as international standards.

Although priority in TR10000 is given to profiles for OSI, work has started in SGFS (Berlin 1991) to incorporate other technical areas, both inside and outside the scope of JTC 1. The first ISP in publication was FTAM (1991).

Joint Technical Committee 1 (JTC 1)

Goals

The key goals of the JTC 1 are to develop a consistent strategy for information technology standards, rather than the project-by-project approach of the past and to accelerate the production of standards.

Deliverables

The key deliverables of the JTC 1 are international information technology standards.

Process

The process for standards creation is the same as ISO's, since JTC 1 is an ISO committee. Delegates represent member bodies, such as ANSI, BSI, and AFNOR. Member bodies must approve all papers submitted. Digital cannot send contributions directly to JTC 1 SCs or WGs, but must send them through the appropriate member body.

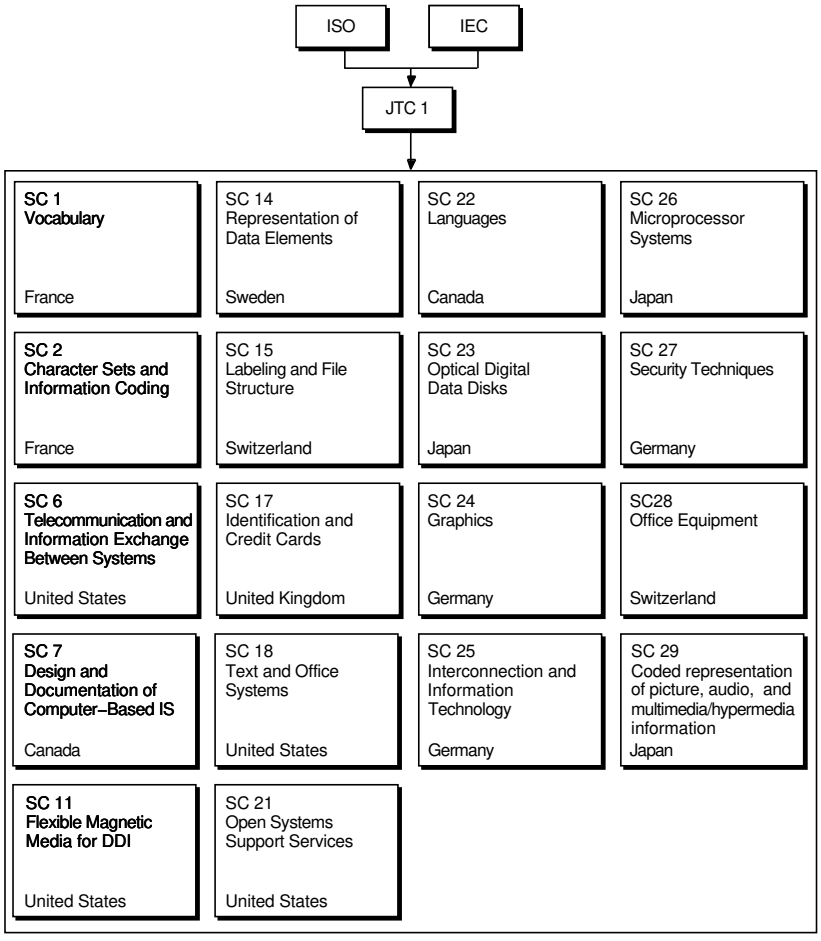
Organization

The JTC 1 consists of 18 SCs and a large number of working groups supporting those SCs. Key committees of interest to Digital are:

- SC18 Text and Office Systems
- SC21 Open Systems Support Services — Open Systems Interconnection (OSI)
- SC22 Languages

The next figure shows the title of each SC, area of responsibility, and the nation holding the secretariat.

Joint Technical Committee 1 (JTC 1)



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For More Information

International Organization for Standardization
1, Rue de Varembé
Case Postale 56
CH-1211 Geneva 20, Switzerland
Telephone: 41 22 734 12 40

8

European Standards Organizations

This chapter contains information on the following European standards organizations:

- Comité Européen de Normalisation (CEN)
- Comité Européen de Normalisation Electrotechnique (CENELEC)
- European Telecommunications Standards Institute (ETSI)

CEN and CENELEC work largely in areas of noninformation technology standardization. ETSI is active in the telecommunications area, where they represent the PTTs and other governmental organizations. The role of all three organizations in the standardization activities in Europe will increase over the next decade, given the 1992 deadline for the establishment of the unified European market for commerce.

Comité Européen de Normalisation (CEN)

Overview

Type of Group:	European standards body
Mission:	To publish European standards
Headquarters:	Brussels, Belgium
Established:	1971
Membership:	Open to national European standards groups (currently 16).
Digital Involvement:	Interested vendor; cannot be a member. Digital participates through its membership in national bodies.
Voting:	Voting members are the national standards bodies, with voting weighted by majority vote.

Description

The Comité Européen de Normalisation (CEN) is the European regional equivalent of the International Standards Organization (ISO). It is made up of representatives from country standards bodies within the European Economic Community (EEC) and European Free Trade Association (EFTA).

CEN and CENELEC cooperate closely. However, the two organizations differ in roles, expectations, and scope of activities. European information technology projects are handled by CEN, CENELEC, or ETSI individually; by CEN/CENELEC jointly; or by CEN/CENELEC/ETSI jointly. The tripartite Information Technology Steering Committee (ITSC) manages the program and divides work between the three organizations, preventing duplication of work.

European nations and users require CEN standards and vendors support them.

Goals

The key goal of CEN is to harmonize the existing standards of the member nations. CEN also publishes European standards.

Comité Européen de Normalisation (CEN)

Deliverables

The key products of CEN are as follows:

- European standards called European Norms (EN) and draft standards (ENV)
- Certificates of conformance to CEN standards; a subordinate body, called CENCER, issues these certificates

Process

Technical committees are created as needed for standards discussion and development. Standards are sometimes developed by consultants and then brought to the committees as a contribution.

European national standards cannot conflict with CEN standards. If CEN develops a standard, all European national bodies must adopt the standard and remove any conflicting national standards.

If CEN does not forward a standard to ISO, European national bodies can forward them if desired or CEN can make the standard into a European regulation.

Organization

CEN is governed by a general assembly composed of its members. The secretary general runs the organization, aided by a technical coordinating committee and a management committee.

For More Information

Comité Européen de Normalisation
rue Bréderode 2, Boîte 5
B-1000 Brussels, Belgium

Comité Européen de Normalisation Electrotechnique (CENELEC)

Overview

Type of Group:	European standards body in the electrotechnical field
Mission:	To publish European standards
Headquarters:	Brussels, Belgium
Established:	1973
Membership:	Open to national European standards groups (currently 16)
Digital Involvement:	Interested vendor; cannot be a member. Digital participates through its membership in national bodies.
Voting:	Voting members are the national standards bodies, with voting weighted by majority vote.

Description

The Comité Européen de Normalisation Electrotechnique (CENELEC) is the European regional equivalent of the International Electrotechnical Commission (IEC). It concerns itself with electrotechnical matters, information technology, and data processing standards activities.

CEN and CENELEC cooperate closely. However, the two organizations differ in roles, expectations, and scope of activities. European information technology projects are handled by CEN, CENELEC, or ETSI individually; by CEN/CENELEC jointly; or by CEN/CENELEC/ETSI jointly. The tripartite Information Technology Steering Committee (ITSC) manages the program and divides work between the three organizations, preventing duplication of work.

Goals

The key goal of CENELEC is to harmonize the existing standards of the member nations. CENELEC also publishes European standards.

Comité Européen de Normalisation Electrotechnique (CENELEC)

Deliverables

The key products of CENELEC are European standards called European Norms (EN) and draft standards (ENV).

Process

Technical committees are created as needed for standards discussion and development.

European national standards cannot conflict with CENELEC standards. If CENELEC develops a standard, all European national bodies must adopt the standard and remove any conflicting national standards.

If CENELEC does not forward a standard to ISO, European national bodies can forward them if desired or CENELEC can make the standard into a European regulation.

Organization

CENELEC is governed by a general assembly composed of its members. The secretariat and secretary general run the organization. The following groups report to the general assembly:

- Technical Board, which controls technical activities
- Liaison Committee, which coordinates the aims and activities of CENELEC and its members with those of other European regional groups
- Components Committee, which focuses on the harmonization of European electrical components standards.

For More Information

Comité Européen de Normalisation Electrotechnique
rue Bréderode 2, Boîte 5
B-1000 Brussels, Belgium

European Telecommunications Standards Institute (ETSI)

Overview

Type of Group:	European telecommunications standards body
Mission:	To publish European telecommunications standards
Headquarters:	Sophia Antipolis, Valbonne, France
Established:	1988
Membership:	Voting members are the European PTT administrations through a national delegation. ETSI is open to other interest groups including trade associations (such as the European Computer Manufacturers' Association (ECMA) and European Telecommunications and Professional Electronics Industry (ECTEL)), public network operators, manufacturers, users and private service providers, research bodies, and consulting companies. Members in these other interest groups pay a fee for membership but do not have a vote. Individual organizations (not trade associations) can also participate through the national delegations.
Digital Involvement:	Interested vendor; industrial member. Digital participates through membership in the national delegations, and has representatives in the General Assembly, Technical Assembly, and several project teams.
Voting:	Voting members are the national delegations, with voting weighted by majority vote.

Description

The European Telecommunications Standards Institute (ETSI) publishes European telecommunications standards, which are mandatory in Europe for connection to a public network.

ETSI represents the telecommunications interests of all European countries. Each European Community country has one or more national standards bodies, most countries have a separate PTT administration body for telecommunications. In countries where there is more than one body, a goverment body (such as the Department of Trade and Industry or the

equivalent) can serve as the secretariat of the national delegation. ETSI tries to ensure that the interests of all national delegations are represented in the development of European Telecommunications Standards (ETS).

European information technology projects outside the telecommunications area are handled by ETSI, CEN, or CENELEC individually; by CEN and CENELEC jointly; or by ETSI, CEN, and CENELEC jointly. The tripartite Information Technology Steering Committee (ITSC) manages the program and divides work between the three organizations, preventing duplication of work.

Goal

The goal of ETSI is to set uniform telecommunication standards for Europe that are adopted by each individual country. These standards help link national networks and services, and establish telecommunication systems across Europe that benefit both users and manufacturers. The aim is to have unrestricted communication between all European countries.

Deliverables

The key deliverables of ETSI are ETSs in two forms:

- Formal standards (ETS)
- Interim standards (I-ETS) requiring further development, including the following:
  - Pr-ETS (ETSI draft standards)
  - Pri-ETS (ECMA standards submitted to ETSI under the ECMA/ETSI agreement)

    ECMA does the development work on the pri-ETS, and ETSI submits the document to its committees for formal approval as an ETS.

If European standards criteria are met, an ETS is recognized as a European Norm (EN).

Process

The procedure for adopting an ETS or I-ETS is the same as that required for an EN and European prestandard (ENV); it involves public enquiry and a weighted national vote.

European Telecommunications Standards Institute (ETSI)

Organization

ETSI has two major assemblies of its members:

- General Assembly (GA) of all members
- Technical Assembly (TA)

Below these two bodies, there is a system of committees and Project Teams (PT) that perform the functions of the organization and do the technical work. The TA establishes the PTs to do a specific task in a specified time frame.

For More Information

European Telecommunications Standards Institute
BP 52
F-06561 Valbonne-Cedex
France

9

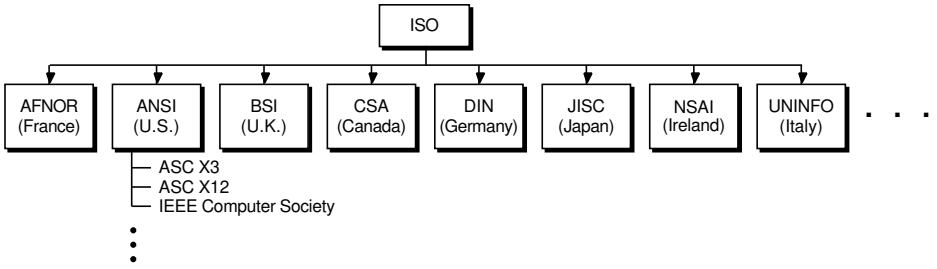
National Standards Bodies

This chapter contains information on the following national standards bodies:

- American National Standards Institute (ANSI)
- Association Française de Normalisation (AFNOR)
- British Standards Institution (BSI)
- Canadian Standards Association (CSA)
- Deutsches Institut für Normung e.V. (DIN)
- Japanese Industrial Standards Committee (JISC)
- National Standards Authority of Ireland (NSAI)
- UNIficazione Information Technology (UNINFO)

Each of these organizations produces national standards and represents their nation in the International Organization for Standardization (ISO). Beneath each national organization, there are many accredited groups, workshops, agencies, and other groups.

The following figure shows the interrelationship of the national bodies with ISO and also shows the groups associated with ANSI, the United States standards body:



American National Standards Institute (ANSI)

Overview

Type of Group:	Accrediting body for United States national standards development
Mission:	To act as a clearinghouse for publishing national and international standards; to serve as the recognized national member body for ISO standards activities; and to ensure that due process and consensus is achieved regarding all proposed standards
Headquarters:	New York, New York
Established:	1918
Membership:	Open to private industry, governmental organizations, and companies. Has about 1250 members.
Digital Involvement:	Member company
Voting:	One vote for each member company or organization

Description

The American National Standards Institute (ANSI) is a nonprofit organization that serves all industries and users in the United States. ANSI coordinates standards activities in areas ranging from film sizes and screw threads to automobiles and computers. ANSI serves as the clearing house for voluntary standards from all major worldwide sources, including ISO, the IEC, and most of the major national standards bodies. ANSI does not write standards.

Goals

The goals of ANSI are as follows:

- To ensure that the United States standards-developing organizations (SDOs) use ANSI rules of openness, fairness, and consensus in the development of standards
- To publish approved ANSI standards

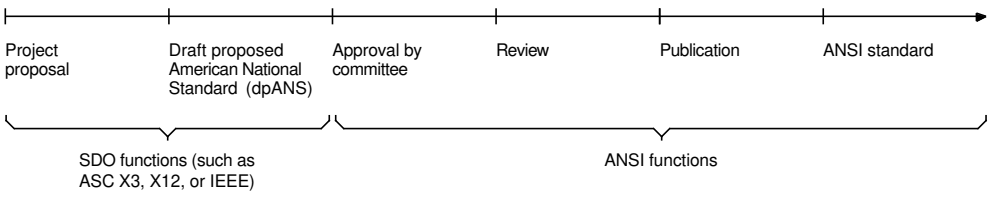
American National Standards Institute (ANSI)

Deliverables

ANSI produces rules for participation in standards development and ensures through a public review process that standards-developing organizations produce United States American National Standards under rules of openness and consensus. Only ANSI can give a standard American National Standards status.

Process

The key feature of the ANSI standards process is the consensus review by all parties, from providers, through users, to the government. Anyone with a directly or materially affected interest in a proposed standard has an opportunity to participate in its development. The following figure shows the stages a draft standard goes through to become an American National Standard:

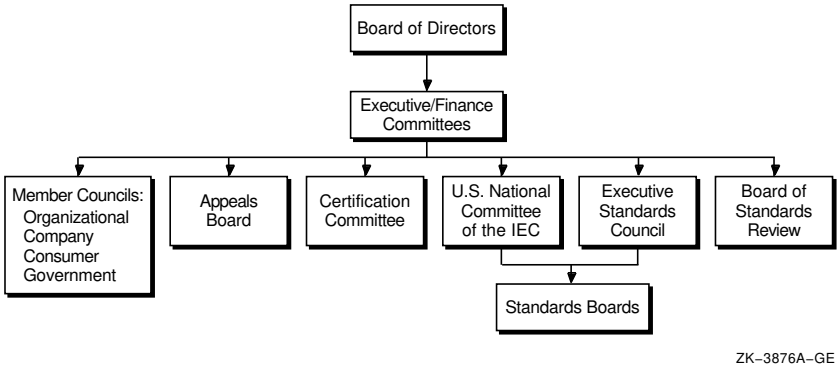


All ANSI standards must undergo a two-month public review process. The creation of an ANSI standard is a complex process that earns ANSI standards high respect from developers and users.

American National Standards Institute (ANSI)

Organization

The Board of Directors is the governing and policy-making body of ANSI, aided by the Executive and Finance Committees. Various committees and councils make up the core of the ANSI organization as shown in the following figure:



For More Information

American National Standards Institute
11 West 42nd Street, 13th Floor
New York, New York 10036
Telephone: (212) 642-4934

Association Française de Normalisation (AFNOR)

Overview

Type of Group:	French national standards body
Mission:	To establish French national standards and represent France in the ISO/IEC, CEN/CELELEC, and ETSI
Headquarters:	Paris, France
Established:	1926
Membership:	Open to any company or individual (fee in accordance).
Digital Involvement:	Member, represented on the Board through the SFIB (French computer manufacturers group)
Voting:	Through the SFIB

Description

The Association Française de Normalisation (AFNOR) is the national public body in charge of standards for France. AFNOR is a nonprofit company ruled by the French regulation on Association LOI 1901. It is a public interest forum and receives support from the French government (about 35 percent of the functioning costs).

AFNOR serves the French national interests and represents France at international standards meetings.

AFNOR is entrusted by the French government with responsibilities for sourcing, coordinating, approving, and promoting standards as well as controlling the use of the NF label, a trademark that shows compliance with a French national standard.

Goal

The key goal of AFNOR is to produce national standards for France.

Association Française de Normalisation (AFNOR)

Deliverables

AFNOR publishes three types of standards:

- Approved or mandatory standards, which must be used when the public market is concerned
- Experimental standards, which are voluntary (new processes or techniques)
- Informational or guide standards

AFNOR also authorizes use of the NF label.

Organization

The Comité Interministeriel de Normalisation oversees all of the French national efforts in standardization. It is chaired by a delegate nominated by the government.

A special committee, called Comité d'Orientation et de Programmation (COP), prepares the objectives and general priorities for standardization; evaluates the results, proposing measures for improvement and development of standards; and prepares the annual program.

The COP committee membership includes six representatives from the professions, two representatives from the government, and four people designated by the Board of Directors on recommendation from the president of AFNOR.

Other committees deal with finance, consumer issues, international affairs, and certification.

AFNOR is governed by a Board of Directors, which is composed of the following:

- Senior civil servants appointed from the government ministries that are impacted most by standardization
- Members elected from the AFNOR membership by the board for three-year terms
- Other generally elected members who serve as representatives with three-year terms
- Experts appointed by the various ministries

Association Française de Normalisation (AFNOR)

AFNOR has two types of working groups:

- Organization and follow-up groups that are responsible for the administrative management of AFNOR
- Technical development and standards creation groups that are responsible for standards creation

For More Information

Association Française de Normalisation
Tour Europe — Cedex 7
F-92080 Paris La Défense, France

British Standards Institution (BSI)

Overview

Type of Group:	British national standards body
Mission:	To coordinate all standardization efforts in the United Kingdom
Headquarters:	London, England
Established:	Early 1900s, but received its present name and royal charter in the 1930s
Membership:	Open to interested parties ranging from nationalized industries to professionals and consulting engineers.
Digital Involvement:	Member through our British subsidiary
Voting:	By concensus of voting members

Description

The British Standards Institution (BSI) is the official British standards group. BSI is funded by its members, the government, and revenues from the sale of standards. Its overriding purpose is to protect the British citizen from poorly made goods and services.

DISC (Delivering Information Solutions to Customers through international standardization) is a division of BSI that focuses on information technology. Membership in DISC gives members the right to sit on DISC standards committees. In contrast, membership in BSI does not give members the right to sit on any standards committees.

BSI owns and operates the Hemel Hempstead Division test house. This test house administers the BSI Quality Assurance Program and provides BSI standards compliance marks.

BSI works closely with ISO standards. Where possible, BSI adopts an ISO standard for use in the United Kingdom. When it can, BSI promotes BSI standards for adoption internationally.

British Standards Institution (BSI)

Goals

The key goals of BSI are as follows:

- To ensure simplification of production and distribution of goods and services, thereby eliminating duplication waste of time and material
- To set up and promote standards for quality and dimensions for manufacturers and other parties
- To certify those products that comply with BSI standards

Deliverables

The key deliverables of BSI are British national standards and a compliance mark for products and services that meet the standards for British quality.

Organization

The work of standardization is done by technical committees similar to other national standards bodies.

For More Information

British Standards Institution
2 Park Street
UK-London W1A 2BS

Canadian Standards Association (CSA)

Overview

Type of Group:	Canadian national standards body
Mission:	To ensure that merchandise sold or made in Canada is safe and of good quality
Headquarters:	Rexdale, Ontario
Established:	1919
Membership:	Open to any Canadian citizen, business, or organization.
Digital Involvement:	Involved since about 1973 in all aspects, but primarily in IT activities through the Canadian Digital subsidiary
Voting:	One vote for each member under all conditions of voting (formal, recorded, or letter ballot) with 50 percent of voting members voting and a two-thirds affirmative vote of all votes received

Description

The Canadian Standards Association (CSA), together with consumers, manufacturers, retailers, laborers, governments, and regulators at the provincial and national levels, provides Canadian national standards. CSA standards address a wide area ranging from lifestyles and the environment to construction, electrical, and quality environments. The CSA is accredited by the Standards Council of Canada as a standards writing, product certification, and conformance testing organization.

CSA is not a member body to the ISO in Canada. The Standards Council of Canada is the member body.

CSA is the national body for standardization IT and serves by establishing the Canadian Advisory Committees to the ISO. For the various ISO committees, there is a harmonized CSA committee to work out the national position and acceptance of ISO standards. Through a ballot process, CSA recommends national acceptance of ISO standards as Canadian national standards.

Canadian Standards Association (CSA)

Goals

The key goal of CSA is to provide an open and effective forum for enabling the exchange of goods and services through the use of standards, certification, and related services to meet national and international needs.

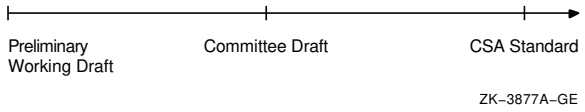
Deliverables

The key deliverables of CSA are standards, certification, and testing services.

Process

Standards development originates with a request sent to the CSA for consideration. If the request is valid, it is sent to the Standards Division, which assigns it to an appropriate Standards Steering Committee for action.

There are three stages to development of a CSA standard as shown in the following figure:



Organization

The CSA is governed by a Board of Directors, elected every two years by the members of the association. The Board manages the overall direction of the CSA. A Board-appointed president manages the day-to-day functioning.

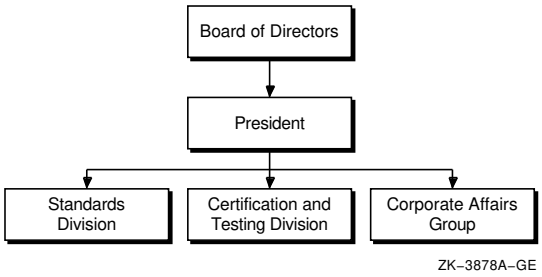
The standards division develops standards in areas ranging from environmental to transportation. The Standards Policy Board manages this division through the creation of Standards Steering Committees (SSCs). Each SSC also has technical committees that write the standards. There are now over 900 technical committees. The following two areas are of interest to Digital:

- Electrical and electronics
- Communications and information

Canadian Standards Association (CSA)

The certification and testing division certifies that products and services meet Canadian or other national standards. The corporate affairs group interfaces with the national and provincial governments as well as the public, provides marketing services, and manages the membership of CSA.

The following figure shows the organization of the CSA:



For More Information

Canadian Standards Association
78 Rexdale Boulevard
Rexdale, (Toronto) Ontario
M9W 1R3
Telephone: (416) 747-4000
FAX: (416) 747-4149

Deutsches Institut für Normung e.V. (DIN)

Overview

Type of Group:	German national standards body
Mission:	To create German national standards in all fields except electrotechnology, which is the responsibility of the German Electrotechnical Committee
Headquarters:	Berlin, Germany
Established:	1917
Membership:	Open to producers, user groups, organizations, government, trade unions, and the academic commmunity. DIN has over 800 full-time staff members, some of which are employed by their organizations rather than DIN.
Digital Involvement:	In national committees mirroring ISO/IEC JTC 1
Voting:	By consensus on committee; national standards approved by public consensus

Description

The Deutsches Institut für Normung e.V. (DIN) is the national standards organization for the Federal Republic of Germany. DIN is a voluntary organization that creates consensus standards; it does not create regulations. DIN is committed to an open process, has an international focus, and a sensitivity to technical and economic issues.

DIN is Germany's official representative at ISO, the IEC, and other national and international groups, including CEN and CENELEC.

Goals

The key goals of DIN are as follows:

- To create German national standards for the benefit of the nation and its people
- To provide a forum and mechanism for German views to be presented and represented in regional and international standardization forums

Deutsches Institut für Normung e.V. (DIN)

Deliverables

The key deliverables of DIN are standards and a testing and inspection mark that ensures adherence to standards.

Process

Completion of a standard requires the following:

- A period of public comment and review
- Review by the DIN Standards Examination Office to verify that it does not conflict with other standards
- Formalization as a DIN standard

DIN has over 20,000 standards.

Organization

DIN is overseen by a president elected by the general membership. The president appoints a DIN director who oversees the Central Administrative Group. This group manages the administrative and financial activities of DIN and the various committees that create the standards.

DIN has over 120 major committees, and over 3500 technical committees composed of volunteers who write standards.

For More Information

Deutsches Institut für Normung e.V.
Burggrafenstrasse 6
Postfach 1107
D-1000 Berlin 30
Federal Republic of Germany
Telephone: +49 30 260 11
FAX: +49 30 260 12 31

Japanese Industrial Standards Committee (JISC)

Overview

Type of Group:	Japanese national standards body
Mission:	To deliberate and review Japanese Industrial Standards (JIS) and JIS drafts, and to represent Japan in the ISO and IEC
Headquarters:	Tokyo
Established:	1952
Membership:	Open to scholars and people of experience or government officials recommended by related ministers and appointed by the Minister of International Trade and Industry. Has about 240 members. The JISC chairperson is elected by mutual vote of the members.
Digital Involvement:	None
Voting:	Voting rules are as follows: • General Assembly (quorum 1/3; affirmative vote: 1/2 majority) • Standards Council (quorum 1/2; affirmative vote: 1/2 majority) • Division Councils (quorum 1/2; affirmative vote: 2/3 majority) • Technical Committee (quorum 2/3; affirmative vote: 2/3 majority)

Description

The Japanese Industrial Standards Committee (JISC) is the national standards body of Japan. JISC was established based on the Industrial Standardization Law enacted in Japan in 1949. JISC covers not only information technology standards, but all kinds of industrial standards.

Japanese Industrial Standards Committee (JISC)

Goals

The goals of the JISC are as follows:

- To develop unified industrial standards that apply to production, marketing, and consumption of products
- To ensure consistency between JIS and international standards

Deliverables

The key deliverables of JISC are JIS.

Process

The JISC technical committee develops JIS drafts. Upper councils discuss and approve the drafts. Most JIS drafts are developed by nongovernment organizations, such as the Japan Standards Association (JSA) and the Information Processing Society of Japan (IPSJ) delegated by the JISC.

Organization

JISC belongs to the Agency of Industrial Science and Technology of the Ministry for International Trade and Industry (MITI). JISC should discuss and approve all JIS; however, other ministries are also responsible for JIS standardization, including the following:

- Ministry of Health and Welfare
- Ministry of Agriculture, Forestry, and Fisheries
- Ministry of Transport
- Ministry of Construction
- Ministry of Education
- Ministry of Post and Telecommunications
- Ministry of Labor
- Ministry of Home Affairs

The JISC organization includes the following divisions:

- Standards Council

  This division includes the JISC chairperson, vice-chairperson, and people appointed by the JISC chairperson.

Japanese Industrial Standards Committee (JISC)

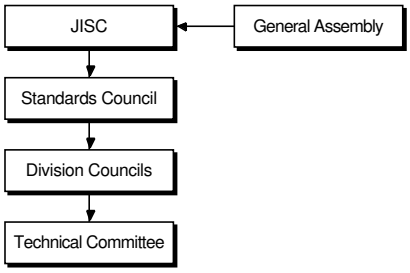
- Division Councils

  Members are appointed by the JISC chairperson.

- Technical Committee

  Members are recommended by the division councils and appointed by the JISC chairperson.

The following figure show the JISC organization:



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For More Information

Agency of Industrial Science and Technology
Ministry of International Trade and Industry
1-3-1, Uchisaiwai-cho, Chiyoda-ku
Tokyo 100, Japan

National Standards Authority of Ireland (NSAI)

Overview

Type of Group:	Irish national standards body
Mission:	To formulate, develop, and publish standards for quality, design, performance, and safety of products; and to serve as the certification and accreditation body for Ireland
Headquarters:	Dublin, Ireland
Established:	1984
Membership:	Open to government departments, academic institutions, trade associations, and private industry
Digital Involvement:	Industrial member; chair of AGITS and AGITS/WG1
Voting:	By consensus

Description

The National Standards Authority of Ireland (NSAI) is a government agency under the Ministry of Science and Technology. NSAI formulates standards through a series of consultative committees that cover different industrial sectors. These committees report to the Board of NSAI. The IT industry committee is the Advisory Group on Information Technology and Telecommunication Standards (AGITS). The purpose of AGITS is as follows:

- To advise NSAI and the government on matters related to the introduction of information technology and telecommunications standards
- To review the general operation of European and international information technology and telecommunications standardization programs and to coordinate national participation in such programs
- To initiate and coordinate industrial participation in European and international technical programs relating to information technology and telecommunications standardization

National Standards Authority of Ireland (NSAI)

Goals

The key goals of NSAI are to produce Irish national standards and to provide an inspection body to assess whether companies comply with those standards.

Deliverables

The key deliverables of NSAI are Irish national standards. Where possible, NSAI implements ISO/IEC international standards and European standards by publishing dual-numbered national standards that reflect the number of the ISO/IEC, CEN/CENELEC standard implemented.

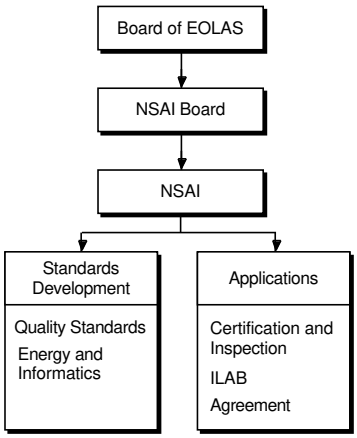
Process

The procedure for adopting an international standard involves public enquiry and consensus.

Organization

The NSAI Board reports to the EOLAS Board. EOLAS, the Irish Science and Technology Agency, was established in 1988 to bring together several related, but previously independent, state organizations.

The following figure shows the NSAI organization:



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National Standards Authority of Ireland (NSAI)

For More Information

National Standards Authority of Ireland
EOLAS Board
Glasnevin
Dublin-9 Ireland
Telephone: +353 1 37 01 01
FAX: +353 1 36 98 21

UNIficazione Information Technology (UNINFO)

Overview

Type of Group:	Italian national standards body
Mission:	To develop national standards and to cooperate in defining international standards for information technology
Headquarters:	Torino, Italy
Established:	1947 as UNIPREA; 1991 as UNINFO
Membership:	Three member classes: • Onorario — Organizations or individuals with relevant background in standards or contributors to the development of UNINFO • Ordinario — Public and private companies, research centers, and universities interested in standards-related activities • Aderente — Individuals working on standards
Digital Involvement:	Ordinario member, active in ISO/IEC JTC 1 information technology and ISO TC184 automation and integration
Voting:	On organizational issues, voting is proportional to the fees paid; Digital has 25 percent of the votes. On standards-related issues, each company member active in the interested area within the UNINFO technical structure has one vote.

Description

UNIficazione Information Technology (UNINFO), formerly UNIPREA, is a nonprofit organization working under the Italian organization Ente Nazionale di UNIficazione (UNI). UNI is the Italian national equivalent of CEN and ISO.

UNIPREA started with a focus on bearings, coatings, and photography, reflecting the industrial interests in the Turin area at that time. Later, IT technology was added to the charter, following the increasing weight of the

local electronic industry. About 80 percent of UNINFO's activity is now IT oriented and focused on international activities.

Committees of concern to UNINFO are the following:

- ISO/IEC JTC 1 Information Technology
- ISO TC184 Automation and Integration
- ISO TC68 Banking

Goals

The key goal of UNINFO is to develop national standards and define international standards for IT.

Deliverables

The key deliverables of UNINFO are as follows:

- Contribution to IT international standards organizations
- Development of IT national standards

Process

In the area of contribution to international standards, UNINFO uses the same structure as the ISO with subcommittees and working groups. The technical work is done by experts from the UNINFO member organizations within the working groups that directly contribute to the international organization. Voting and national positions are defined on the basis of a ballot among the members active in the area. When consensus is not reached, the position is expressed with a majority of votes.

In the area of national standards development, UNINFO either adopts developed international standards, as decided by UNINFO technical committees, or develops an independent national standard within the subcommittees and working groups structures.

UNIficazione Information Technology (UNINFO)

Organization

UNINFO has the following divisions:

- Members assembly

  Consists of Ordinari and Aderenti UNINFO members whose purpose is to designate the management committee.

- Management committee

  Consists of thirteen UNINFO Ordinari members, one UNINFO Onorari member, and a representative of the UNI President. Activities include defining the technical committees, designating the President and the UNINFO Secretary, evaluating and accepting UNINFO members, evaluating and accepting areas of standardization to be addressed, and defining the work program of the technical committees. The management committee acts as the administrative body of UNINFO.

- UNINFO President

  Designated by the management committee to formally represent the UNINFO.

- UNINFO Secretariat

  Designated by the management committee to manage the UNINFO and to coordinate, when needed, the technical activities of the committees and subcommittees within the UNINFO.

- Financial staff

- Technical structure, based on the technical committees, subcommittees, and working groups as follows:

  – Technical committees

    Each committee is represented by a convener, who is part of the managing committee, and UNINFO members interested in the related area of standardization. Each technical committee has the following tasks: elaborate and submit to the management committee information on the development of standards, create the needed subcommittees and working groups, evaluate and accept international standards as national standards, and delegate representatives to the international meetings.

- Technical subcommittees and working groups

  Consists of experts on the relevant topics, representing the UNINFO members. Activities include the following: designate a convener, cooperate with the relevant international organizations, define national votes and positions on the international standards, participate in the international meetings, and define national standards when required.

For More Information

UNI-Information Technology
Corso Galileo Ferraris 93
10128 Torino, Italy
Telephone: +39-11-501027 or +39-11-501964
FAX: +39-11-501837

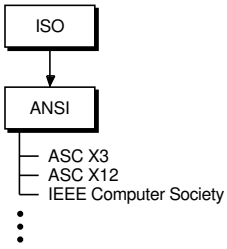
10

ANSI Accredited Standards Organizations

This chapter contains information on the following ANSI accredited standards organizations:

- Accredited Standards Committee X3 (ASC X3)
- Accredited Standards Committee X12 (ASC X12)
- Computer Society of the Institute of Electrical and Electronics Engineers (IEEE)

The following figure shows the relationship of these organizations to ANSI and ISO:



Accredited Standards Committee (ASC) X3

Overview

Type of Group:	Information technology accredited standards development committee
Mission:	To create standards for computers, languages, software, peripheral equipment, and related media
Headquarters:	Washington, D.C.
Established:	1960
Membership:	Open to United States producers, consumers, and general-interest organizations in the information technology industry. Membership ranges from 40 to 45 members.
Digital Involvement:	Member company
Voting:	One vote for each member company or organization

Description

The Accredited Standards Committee (ASC) X3 is the primary source for United States national standards for information technology systems. ASC X3 is supported through fees paid by its members. The Computer and Business Equipment Manufacturers Association (CBEMA) provides functional, legal, and administrative support (the secretariat) for X3. CBEMA also serves as the United States TAG to the JTC 1.

Goal

The key goal of ASC X3 is to write information technology standards that are useful to consumers (both commercial and government users).

Deliverables

The key products of ASC X3 are national standards.

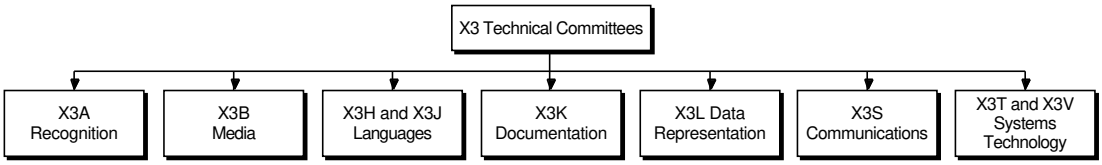
Accredited Standards Committee (ASC) X3

Process

ASC X3 uses an ANSI-approved process for creating standards. (See the description of ANSI in Chapter 9.)

Organization

The secretariat for ASC X3 provides administrative support with approximately twelve staff members. The work of ASC X3 occurs through voluntary participation in the technical committees (TCs) of which there are seven categories as shown in the following figure:



Each TC is numbered; for example, X3J11 is a committee devoted to the C language.

For More Information

ASC X3 Secretariat
CBEMA
311 First Street, NW, Suite 500
Washington, D.C. 20001
Telephone: (202) 737-8888

Accredited Standards Committee (ASC) X12

Overview

Type of Group:	Accredited standards development committee
Mission:	To develop uniform standards for electronic data interchange (EDI) between industries
Headquarters:	Alexandria, Virginia
Established:	1979
Membership:	Open to any individual, company, or organization that is directly and materially affected by X12 activities. Has about 400 members.
Digital Involvement:	Member company
Voting:	Two-thirds approval by voting members at the meeting or by letter ballot

Description

The Accredited Standards Committee (ASC) X12 is chartered by ANSI. ASC X12 is the primary source for United States national standards for electronic data interchange. ASC X12 is supported through fees paid by its members.

Goals

The key goals of ASC X12 are to develop and maintain EDI standards.

Deliverables

The key deliverables of ASC X12 are national standards for EDI.

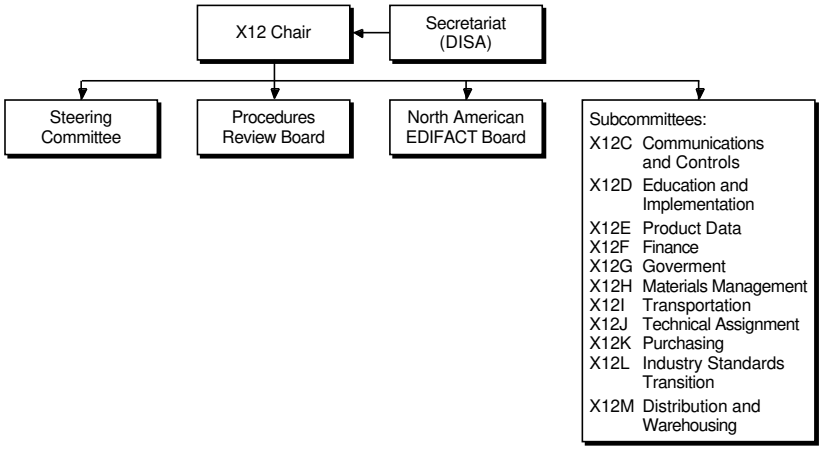
Process

ASC X12 uses an ANSI-approved process for creating standards. (See the description of ANSI in Chapter 9.)

Accredited Standards Committee (ASC) X12

Organization

The Secretariat for ASC X12 is the Data Interchange Standards Association, Inc. (DISA), a nonprofit corporation. DISA is also the Secretariat for the North American EDIFACT Board, whose focus is the development and maintenance of international EDI standards. The Steering Committee, along with the Secretariat, develops recommendations for the administration of X12. Subcommittees have responsibility for specific standards activities. The following figure shows an overview of the X12 organization:



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For More Information

Data Interchange Standards Association
ASC X12 Committee Secretariat
1800 Diagonal Road, Suite 355
Alexandria, Virginia 22314-2852
Telephone: (703) 548-7005

Computer Society of the Institute of Electrical and Electronics Engineers (IEEE)

Overview

Type of Group:	ANSI-accredited standards development organization; the Computer Society focuses on standards related to information technology
Mission:	To help maintain the technical vitality of its members for them to advance in the theory, design, and application of computer engineering, science, and technology
Headquarters:	Los Alamitos, California
Established:	The IEEE Computer Society became active in standards development in 1980
Membership:	Members are individuals and not companies. Meeting participation is open to any interested individual; balloting is open to engineering professionals who are members of IEEE or the Computer Society. Members are admitted upon the recommendation of a current member and are required to pay dues to the organization.
Digital Involvement:	Employees of Digital are members.
Voting:	Each individual member has one vote and some institutions can also vote

Description

The Computer Society of the Institute of Electrical and Electronics Engineers (IEEE) is an ANSI-accredited organization for standards development. The IEEE Computer Society primarily produces IEEE standards for the information technology industry. The IEEE Computer Society owns the current work on the POSIX applications programming interface (API) standards (1003.x committees), and also controls the work on Ethernet and Token Ring (802.x committees).

Computer Society of the Institute of Electrical and Electronics Engineers (IEEE)

Goals

The key goals of the IEEE Computer Society are as follows:

- To advance the theory and practices of electrical and electronics engineering
- To create standards for good engineering practice, terminology, safety, and commerce

Deliverables

IEEE submits standards to ANSI for adoption as American National Standards. Unlike ASC X3 and X12, IEEE can directly publish standards once they are approved by IEEE without waiting for the final ANSI approval. The Computer Society has a policy that their information technology standards should also have international approval.

Process

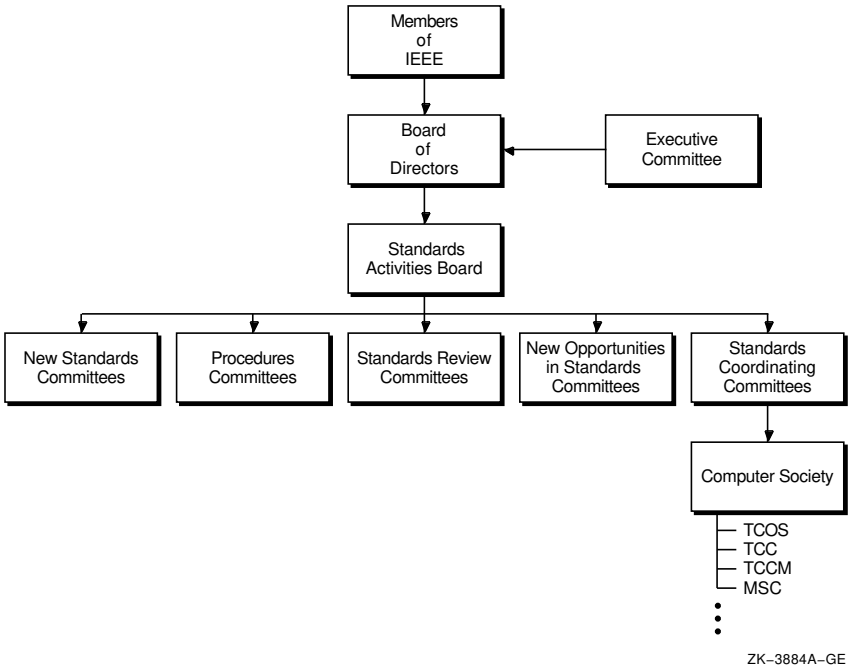
The IEEE Computer Society develops standards. Officially, the IEEE Standards Board approves IEEE standards, but working group ballots are also important.

To approve each work item, the IEEE Standards Activity Board (SAB) issues a Project Authorization Request (PAR). Each IEEE working group must have at least one approved PAR. The PAR gives information on scope and other activities. The SAB reviews PARs and assigns them to an IEEE working group.

Computer Society of the Institute of Electrical and Electronics Engineers (IEEE)

Organization

The IEEE organization is shown in the following figure:



For More Information

The following documents contain more information about IEEE:

- *IEEE Standards Handbook* (IEEE Computer Society)
- *A Guide to IEEE Standards Development* (IEEE Standards Office)
- *IEEE Standards Manual* (IEEE Standards Office)

Computer Society of the Institute of Electrical and Electronics Engineers (IEEE)

More information about IEEE is also available from one of the following locations:

To order publications from the Computer Society:
IEEE Computer Society
Customer Service Center
10662 Los Vaqueros Circle
P.O. Box 3014
Los Alamitos, California 90720-1264
Telephone: 1 (800) 272-6657 (In California, call (714) 821-8380)
FAX: (714) 821-4010

IEEE Standards Office
P.O. Box 1331
445 Hoes Lane
Piscataway, N.J. 08855-1331
Telephone: (908) 562-3800 (for information)
1 (800) 678-4333 (for standards orders)
FAX: (908) 562-1571 (for information)
FAX: (201) 981-9667 (for standards orders)
TELEX: 833233

11
Regional Workshops

This chapter contains information on the following regional workshops:

- Asia-Oceania Workshop (AOW)
- European Workshop on Open Systems (EWOS)
- NIST OSI Implementors' Workshop (OIW)

There is no common reporting relationship of the three regional workshops. They all have in common an S-Liaison status in the JTC 1 Special Group on Functional Standards (SGFS), and they coordinate their activities through a Regional Workshop Coordinating Committee (RWSCC). They also maintain a liaison at the technical working group level and occasionally establish an ad hoc coordinating group in a particular technology area with representation from all workshops, such as the MHS ISP group.

Asia-Oceania Workshop (AOW)

Overview

Type of Group:	Open public forum
Mission:	To contribute to the development of the proposed draft International Standards Profile (pdISP) and coordinate with other open systems workshops, such as the European Workshop on Open Systems (EWOS) and the NIST OSI Implementors' Workshop (OIW)
Headquarters:	Tokyo, Japan
Established:	October 1988
Membership:	Open to any computer expert or research person who is interested in developing OSI functional standards for academic and research organizations, standardization bodies, and computer vendors.
Digital Involvement:	Has representatives on the Plenary and in Special Interest Groups (SIGs).
Voting:	Each organization (company, group, standards body, and so on) has one vote on the Plenary and in SIGs. A two-thirds majority is needed for an affirmative vote.

Description

The Asia-Oceania Workshop (AOW) is concerned with Open Systems Interconnect (OSI) functional standards. AOW works closely with other regional OSI workshops, such as EWOS and OIW. All three workshops focus on the development of the proposed draft International Standards Profile (pdISP) for the International Standards Organization Special Group on Functional Standards (ISO SG-FS).

Digital is interested in AOW because it is one of the authorized regional workshops for OSI functional standards. Digital wants to influence AOW as well as EWOS and OIW on its pdISP development activity.

Asia-Oceania Workshop (AOW)

Goals

The key goals of AOW are as follows:

- To contribute to the development of pdISPs.
- To provide opportunities to coordinate the view of AOW members, and develop pdISPs, or submit comments to ISO or other workshops.
- To coordinate with EWOS and OIW. AOW seeks close coordination and cooperation with other regional workshops for the development of internationally harmonized profiles.

Deliverables

The key deliverables of AOW are pdISPs.

Organization

The AOW consists of three major parts:

- AOW council

  The AOW council designates the president of AOW and advises the president on management-related matters. Members on the council must be OSI-promoting groups in Asia-Oceania countries who support the intent of the AOW. Members, authorized at council meetings, include the following:

  - China State Bureau of Technical Supervision (CSBTS, China)
  - Standards Australia (SA, Australia)
  - Electronics and Telecommunications Research Institute (ETRI, Korea)
  - Interoperability Technology Association for Information Processing (INTAP, Japan)

- AOW Plenary meeting

  The AOW Plenary meeting is held twice a year for the following reasons:

  - To enact or revise management rules and handle fundamental issues on the AOW
  - To elaborate on project plans
  - To establish, coordinate, and disband SIGs

  - To approve SIG results
  - To approve the president designated by the council

  Membership includes all SIG members. These members are experts on interoperability technology, primarily in Asia-Oceania countries. The secretariat is INTAP.

- AOW SIG meeting

  AOW SIG meetings are held to discuss pdISP drafts. Members are experts on interoperability technology, primarily in Asia-Oceania countries. Digital has members working in the following SIGs:

  - Directory (DIR)
  - File Transfer, Access and Management (FTAM)
  - Message Handling Service (MHS) (X.400 name for mail service)
  - Network Management (NM)
  - Open Document Architecture (ODA)
  - Transaction Processing (TP)
  - Virtual Terminal (VT)

For More Information

Asia-Oceania Workshop
Sumitomo Gaien Building 3F
24 Daikyo-cho, Shinjuku-ku
Tokyo, Japan
FAX: +81-3-3358-4753

European Workshop on Open Systems (EWOS)

Overview

Type of Group:	European open public forum
Mission:	To serve as a truly open European platform for the development of open systems environment profiles, for issues related to applications portability, and for the definition of corresponding conformance testing specifications
Headquarters:	Brussels, Belgium
Established:	December 1987
Membership:	Open to open systems users, vendors, academic organizations, European federations of technology suppliers (such as ECMA), European user organizations (such as EMUG), and European standards institutions (such as CEN, CENELEC, COSINE, ETSI, OSITOP, and SPAG).
Digital Involvement:	Voting member of the Technical Assembly (TA). Technical participant in several expert groups, chair of the Expert Group on Network Management, and vice-chair of the TA.
Voting:	Two-thirds majority in the Technical Assembly (TA). To be a voting member in the TA, a company needs to send experts to the Expert Groups (at least one) and have been present at two of the three last TA meetings.

Description

The European Workshop on Open Systems (EWOS) is an open systems group partly supported by the Commission of the European Communities (CEC). EWOS brings together both supplier-based bodies (such as ECMA and SPAG) and user-based bodies (such as EMUG and OSITOP).

The main objective of EWOS is to produce functional profiles that EWOS submits to CEN/CENELEC for adoption as European standards, and/or EWOS submits to the ISO/IEC JTC 1 SGFS for adoption as International Standards Profiles (ISPs). SGFS is the JTC 1 Special Group on Functional Standards.

European Workshop on Open Systems (EWOS)

EWOS coordinates its activities with its counterparts in the functional standardization process as follows:

- NIST OSI Implementors' Workshop (OIW) in the United States
- Asia-Oceania Workshop (AOW) in the Far East

Goals

The key goals of EWOS are as follows:

- To create and maintain a focal point in Europe for the study and development of the technical contents of Open Systems Interconnection (OSI) profiles and corresponding conformance test specifications.
- To achieve a broad consensus for the development of OSI profiles and corresponding conformance tests specifications, covering all needs for networking by using OSI base standards.
- To provide an open European forum for all experts on open systems who are willing to join and contribute.
- To cover all needs for networking by using OSI Standards (ISO/CCITT) and, where applicable, in accordance with the work programs for profiles of JTC 1 (ISP) and the Information Technology Steering Committee (ITSTC).
- To cooperate with workshops in other regions with a view to achieve harmonized results.
- To make its output available for rapid standardization worldwide and in Europe.
- To produce its results in a form suitable for immediate use in the standardization process.
- To ensure a close cooperation with ETSI.

Deliverables

The key deliverables of EWOS are as follows:

- OSI profile proposals
- Conformance testing specifications

Working results are presented as one of the following:

- EWOS Documents (EDs), which serve as formal proposals to standards bodies
- EWOS Technical Guides (ETGs), which include information not meant for standardization

Once EWOS submits an ED to CEN for voting, the ED automatically becomes a preENV standard. The ED is then usable by European public procurement groups as a standard under the Council Decision 87/95/EEC.

Process

Delegates represent a member body, such as ANSI, AFNOR, DIN. Member bodies must approve papers. Digital cannot send contributions directly to EWOS, but must submit them through the appropriate member body.

Organization

The EWOS structure is small and flexible. The development process is monitored as an industry project with scheduled delivery dates. The technical activities are managed by a technical assembly. About 200 experts from 90 European, Asian, and United States companies are members of the EWOS Technical Assembly. These members consist of users, suppliers, standardization institutes, government agencies, and academia. Technical work is performed in Expert Groups under supervision of the Technical Assembly. EWOS is administered by a Steering Committee.

Digital employees have the following key positions in EWOS:

- Vice chair of EWOS Technical Assembly and chair of the Expert Group on Network Management (EGNM)
- ECMA representative to the EWOS Steering Committee (SC)
- Representative in the EWOS Common Application Environment (CAE)

Other Digital employees participate in the expert groups, particularly the EWOS CAE group, defining frameworks for open systems. This is becoming increasingly important to Digital.

European Workshop on Open Systems (EWOS)

For More Information

European Workshop on Open Systems
Rue de Stassart, 36 - 1050
Brussels, Belgium

NIST OSI/OSE Implementors' Workshop (OIW)

Overview

Type of Group:	Open public forum
Mission:	To expedite the development of OSI protocols and promote interoperability of data communications equipment
Headquarters:	Gaithersburg, Maryland
Established:	1983
Membership:	Open to organizations interested in implementing or procuring products based on OSI protocols and open systems.
Digital Involvement:	Regularly participates at workshop meetings
Voting:	One vote for each company or independent division

Description

The NIST OSI/OSE Implementors' Workshop (OIW) was organized by the National Institute of Standards and Technology (NIST) at the request of industry. Its purpose is to bring together future users and potential suppliers of Open Systems Interconnection (OSI) protocols.

The Government OSI Profile (GOSIP), Federal Information Processing Standard 146, references the implementation specifications for OSI profiles.

The MAP/TOP Steering Committee and the COS Strategy Forum have endorsed the OIW agreements.

Goals

The key goals of OIW are as follows:

- To expedite the development of OSI protocols
- To promote interoperability of data communications equipment that is independently manufactured

NIST OSI/OSE Implementors' Workshop (OIW)

Deliverables

OIW accepts as input the specifications of emerging standards for protocols, and produces as output agreements on the implementation and testing particulars of these protocols.

Organization

The main body of OIW is a plenary assembly. Any organization can participate; representation is international.

Within OIW, there are Special Interest Groups (SIGs) organized and overseen by the plenary assembly. SIGs submit completed technical work to the plenary for disposition. SIGs are encouraged to coordinate with standards organizations and user groups and to seek widespread technical consensus on implementation agreements through international discussions and liaison activities.

OIW meets four times a year at the NIST headquarters. Each SIG is required to meet at this time. SIGs are also encouraged to hold interim meetings at varied locations around the world.

OIW is evolving into an Open System Environment workshop. This will take it beyond just OSI considerations. It will become the center of implementors' agreements for all aspects of open systems. This will be critical to Digital's future products.

For More Information

National Institute of Standards and Technology
NIST Workshop for Implementors of OSI
Building 225, Room B-217
Gaithersburg, Maryland 20899

12

Consortia, Associations, and User Groups

This chapter contains information on the following standards consortia, associations, and user groups:

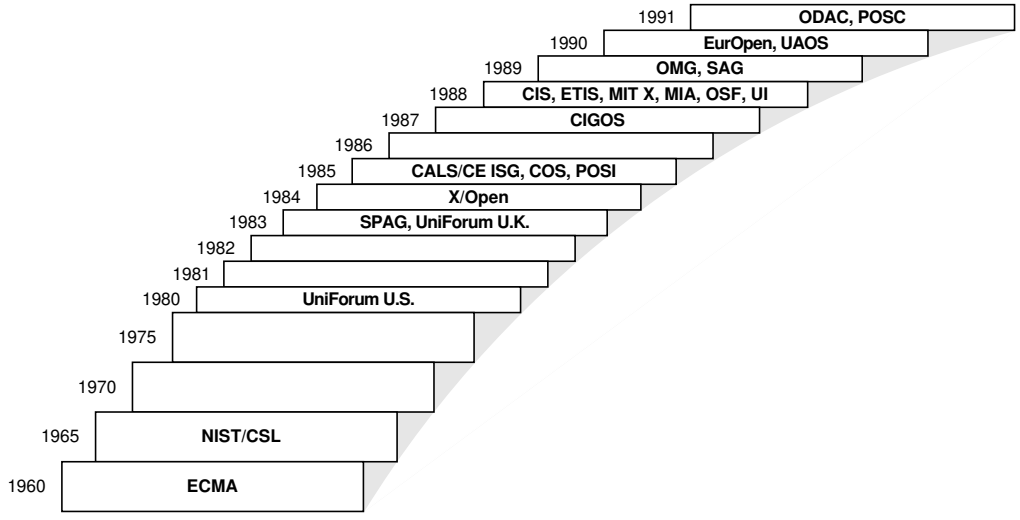
- CALS/CE Industry Steering Group (ISG)
- Canadian Interest Group on Open Systems (CIGOS)
- CASE Integration Services (CIS)
- Corporation for Open Systems (COS)
- European Computer Manufacturers' Association (ECMA)
- European Forum for Open Systems (EurOpen)
- European Telecommunications Informatics Services (ETIS)
- M.I.T. X Consortium
- Multivendor Integration Architecture Consortium (MIA)
- NIST Computer Systems Laboratory (NIST/CSL)
- Object Management Group (OMG)
- Open Document Architecture Consortium (ODAC)
- Open Software Foundation (OSF)
- Petrotechnical Open Software Corporation (POSC)
- Promoting Conference for Open Systems Interconnection (POSI)
- SQL Access Group (SAG)
- Standards Promotion and Application Group (SPAG)
- UniForum
- UniForum U.K.

- UNIX International (UI)
- User Alliance for Open Systems (UAOS)
- X/Open

These organizations are prestandardization bodies. Some are national organizations; others are regional. Each organization has different forms and objectives, but a common goal of them all is the development of information technology standards in ways complementary to the formal standards organizations.

These organizations are usually less bound by complex formal procedures than official standards organizations and so can work faster and more effectively. They are invaluable for technical development and consensus-building. The results of their work are often passed on to the formal standards organizations for formal standardization.

These types of organizations have existed for many years. The European Computer Manufacturers' Association (ECMA) is one of the oldest organizations (established in 1960). Most of the organizations described in this chapter were established in the last ten years as shown in the following figure:



CALS/CE Industry Steering Group (ISG)

Overview

Type of Group:	A U.S. Department of Defense technology group
Mission:	To promote a unified development of CALS standards and system technology
Headquarters:	No central office or secretariat
Established:	1985
Membership:	Open to representatives from the aerospace industry, such as defense contractors, their suppliers (like Digital), their industry organizations, and their consultants. The United States Department of Defense, Armed Services, and NIST representatives also participate. There is some international participation, generally representing European aerospace industry interests.
Digital Involvement:	Member of the CALS ISGs since their inception in 1985, and heavily represented in the technical standards committees
Voting:	Not applicable. Work is usually approved by the consensus process.

Description

CALS/CE (Computer-Aided Logistics Support/Concurrent Engineering) Industry Steering Group (ISG) is part of the U.S. Government Department of Defense (DoD). CALS/CE is concerned with the following:

- The dynamic aspects of CALS information transfer between DoD and industry components
- Modeling of a weapon system framework based on a fully operational CALS heterogeneous network by the years 2010 to 2015
- Offering technology forecast support in five-year increments
- Promoting unified understanding of CALS technology issues

CALS/CE Industry Steering Group (ISG)

By participating in CALS/CE ISG committees, Digital can better understand CALS and be more aware of the problems and concerns of the implementors of CALS in its customer base. Digital can pass this information to sales representatives. Participation also allows Digital to influence the technical and management direction of the ISG committee, to use information and requirements gathered to influence Digital's product directions, and to embed its product directions into the committee position papers, concepts, and requirements.

Goals

The objectives of the CALS/CE ISG are as follows:

- To accelerate the integration of design tools for reliability and maintainability into contractor computer-aided design and information systems. The result is more reliable, supportable weapons systems with lower life-cycle costs.
- To encourage and accelerate the automation and integration of contractor processes for generating technical information on weapon systems (technical manuals, training materials, and other product data). The result is more consistent data, less duplication of effort, and ultimately lower data costs.
- To increase the DoD's capability to receive, store, distribute, and use logistics technical information; and to improve weapons systems maintenance, training, and spare parts procurement. The result is reduced cost of data handling; more timely, accurate, and accessible data in the hands of the users; and major gains in functional requirements.

Deliverables

CALS will be implemented in three phases:

- Phase I — To meet minimum interface and exchange goals, identify key standards for data exchange, and require the use of CALS in specified weapons system programs.
- Phase II — To establish industry-wide distributed databases.
- Phase III — To establish intelligent data exchange standards.

CALS/CE Industry Steering Group (ISG)

Process

Work is divided by task group. Within each task group there are subtask groups and working groups.

Organization

The CALS/CE ISG group has seven task groups:

- Concurrent Engineering
- Information Management
- Logisitic Process
- Acquisition
- Education/Training
- Small Business
- International

Under Information Management, for example, there are five subtask groups: System/Data Protection, Standards, Information Integration, Information Technology, Configuration Management. Each of these in turn can have several working groups.

For More Information

More information about the CALS/CE ISG is available from the CALS Notes conference. For information on the location of this conference, see the standards section in the corporate VTX infobase. For information on the VTX infobase, see Chapter 2.

CALS/CE Industry Steering Group
Suite 300
1025 Connecticut Avenue NW
Washington DC 20036
Telephone (202) 775-1440

Canadian Interest Group on Open Systems (CIGOS)

Overview

Type of Group:	Interest group
Mission:	To accelerate the development, incorporation, and exploitation of open systems and OSI-based IT products and services to enhance Canadian competitiveness, and to protect user investments in IT equipment
Headquarters:	Ottawa, Ontario, Canada
Established:	May 1987
Membership:	Open to any organization, individual, corporation, or association on a worldwide basis
Digital Involvement:	Digital is a founding member and continues to play a supportive role. Digital Canada currently holds a position on the Board of Directors.
Voting:	Equal weight to all members, one vote for each company

Description

The Canadian Interest Group on Open Systems (CIGOS) consists of users and suppliers of information technology services. Membership includes computer and telecommunications product and service providers, university and research personnel, and government and consulting groups.

CIGOS identifies and acts on member needs and Canadian issues. CIGOS has formal links to the following groups:

- Corporation for Open Systems (COS)
- Open Systems Interconnection / Network Management Foundation (OSI/NMF)
- UniForum Canada
- Canadian Business Telecommunications Affiliation (CBTA)
- Canadian Integrated Services Digital Network (CDN ISDN) interest group

Canadian Interest Group on Open Systems (CIGOS)

Goals

The key goals of CIGOS are as follows:

- To promote open systems awareness, including the exchange and dissemination of information in Canada
- To encourage Canadian suppliers to take a proactive role in developing open systems-based products and services
- To develop appropriate liaisons and affiliations with international open systems-oriented organizations and to actively support testing harmonization and accreditation activities
- To identify open systems issues of strategic importance to Canada and to identify the activities and decisions needed to effect progress

Deliverables

The key deliverables of CIGOS are as follows:

- Three major CIGOS conferences in Canada
- Business plan for the Canadian open systems testing program
- Regional tutorials to introduce and expand the understanding of the concepts and implications of open systems
- Technical reports on conformance testing and functional profiles
- Registration authority program with CSA for Canadian OSI products
- Bilingual quarterly newsletter (CIGOS NEWS)

Organization

CIGOS has a president and a Board consisting of twelve directors. The membership elects the president and the Board on an annual basis. Each Board member is responsible for a specific responsibility, such as membership, treasury, awareness, and government relations. CIGOS schedules Board meetings on a frequent basis. CIGOS group meetings are held quarterly. Decisions are made by consensus.

Canadian Interest Group on Open Systems (CIGOS)

For More Information

Canadian Standards Association
Canadian Interest Group on Open Systems
78 Rexdale Boulevard
Rexdale, (Toronto) Ontario
M9W 1R3
Telephone: (416) 747-4000
FAX: (416) 747-4149

CASE Integration Services (CIS)

Overview

Type of Group:	User and vendor association
Mission:	To develop or adopt a set of standard interfaces that promote the integration of software engineering tools
Headquarters:	No headquarters location
Established:	1988
Membership:	Open to systems vendors, independent software vendors, Computer-Aided Software Engineering (CASE) tools users, and research consortia. Has about 14 active member organizations (many inactive members and observers).
Digital Involvement:	Founding member with Atherton Technology. Digital holds the secretary and redactor (editor) positions. The New Software Group (TNSG) owns responsibility for this group, in particular the Technical Languages and Engineering (TLE) and CAD/CAM Technology Center (CTC) organizations.
Voting:	One company, one vote with an equal vote for all members.

Description

The Computer-Aided Software Engineering (CASE) Integration Services (CIS) standards committee was formed originally to develop a standard interface that services could use to integrate software engineering tools into CASE environments. The emphasis of CIS is on interfaces. CIS addresses implementation details only when necessary to validate the chosen interfaces.

CIS has a formal liaison with CAD Framework Initiative, and informal liaisons with several standards groups, including OSF CASE SIG (Open Software Foundation CASE Special Interest Group) and ECMA-PCTE (Portable Common Tool Environment of the European Computer Manufacturers Association).

CASE Integration Services (CIS)

Digital is interested in CIS because CIS is one of the places where Digital is pushing its CASE tools solution (based on A Tools Integration Standard (ATIS)). CIS is a forum where tool vendors and environment vendors come together to discuss user requirements. Through CIS, Digital hopes to gain more tools to integrate into its environment.

Note

CIS presented a proposal to the ASC X3 Standards Planning and Requirements Committee (SPARC) to form a new X3 technical committee (TC). On July 10, 1991, SPARC recommended that a new TC, numbered X3H6, be formed. The X3 committee must now vote to approve the committee. CIS is waiting for the X3 ballot to complete before making any official proclamations.

Goals

The key goals of CIS are as follows:

- To support and further a set of object-oriented extensions to repository standards based on ATIS
- To focus on two problems of integration
  - Data integration

    How to share the description of data among tools (not the data itself); for example, versions, configuration management, schema definition, and extensions
  - Control integration

    How to share control information among tools; for example, selecting and displaying tool-local objects and establishing links and relationships between tool-local objects

Deliverables

The key products of CIS are interfaces that address the problems of integrating software tools.

Process

Two working groups perform the technical work of CIS. The CIS committee meets at least every six months to review and approve technical proposals from the following working groups:

- Demonstration Working Group

  This group is working on a trade show exhibition to demonstrate the use of CIS interfaces and vendor cooperation.

- Interface Set Working Group

  This group is working on aspects of tool integration that are not covered in the CIS interfaces, such as security, transactions, control integration, and object granularity. Additionally, this group is addressing the interface between PCTE and CIS.

Organization

The CIS organization includes a chairperson, vice-chairperson, secretary, and redactor (editor).

For More Information

More information about CIS is available from the CIS Notes conference and the CIS representative in Digital. For information on the location of the Notes conference and who to contact, see the standards section in the corporate VTX infobase. For information on the VTX infobase, see Chapter 2.

Corporation for Open Systems (COS)

Overview

Type of Group:	User and vendor consortium
Mission:	To accelerate the introduction of OSI/ISDN (Open Systems Interconnection/Integrated Services Digital Network) products based on international standards
Headquarters:	McLean, Virginia
Established:	1985
Membership:	Open to vendors, users, and associations. Has over 50 member companies. Levels of membership are tied to the amount of annual dues.
Digital Involvement:	Founding senior research member. Digital is represented on the Board of Directors, the Executive Committee, and the four standing committees of the Strategy Forum. The Digital Telecommunications and Networking (T&N) group owns responsibility for this group.
Voting:	Digital has voting membership. The Board of Directors and Strategy Forum have one vote for each member company.

Description

The Corporation for Open Systems (COS) is an open consortium of user and vendor companies whose goal is to accelerate the introduction of OSI/ISDN products and services. COS has within its Requirements Committee the following user groups:

- North American MAP/TOP (Manufacturing Automation Protocol/Technical and Office Protocol) User Group. This group has a requirements interest group under the Requirements Committee.
- User Alliance for Open Systems (UAOS). See the section on UAOS in this chapter for more information.

Membership in either MAP/TOP, UAOS, or both does not automatically enable members to participate in COS activities.

Corporation for Open Systems (COS)

Goals

The key goals of COS are as follows:

- To establish a functional profile for open systems
- To coordinate user open systems requirements
- To create and document a user-driven requirements process
- To create a U.S. industry and government partnership for testing and certification
- To accelerate internationally recognized tests, profiles, and laboratory accreditation
- To promote and provide education and training for open systems products and services

Deliverables

The key products of COS are user-driven requirements documents and a functional profile and specifications for open systems.

Also, COS has a testing group that performs tests for open systems verification. The COS mark, a certification symbol, indicates that a product has passed the COS testing group requirements.

Process

COS generates an annual and strategic plan that identifies COS goals and deliverables over a one- to three-year time period. The Board of Directors approves this plan, and the staff and membership execute it. Certain aspects of the plan are delegated to special committees for responsibility and authority. For example, the Architecture Committee is responsible for Open Systems Profiles and bringing the selected profiles to the Strategy Forum for approval.

The COS Strategy Forum meets four times yearly; the committees and subcommitttees meet more often.

Corporation for Open Systems (COS)

Organization

COS is composed of a salaried professional staff of about 55 people and the following two membership bodies:

- Board of Directors, who provide policy and financial guidance. The COS Executive Committee of the Board acts for the Board on most matters.
- Strategy Forum, which provides strategic direction and organizes the work of the membership.

The Strategy Forum consists of four standing committees:

- Steering Committee, which develops the strategy and oversees the administration of the member efforts.
- Architecture Committee, which drives the technical agenda for the members, including the OSI/ISDN profile selection, testing and certification, and harmonization.
- Requirements Committee, which is the user requirements forum.
- Marketing Committee, which drives OSI/ISDN events and advertising.

Each of the standing committees has subcommittees and task forces.

For More Information

Corporation for Open Systems
1750 Old Meadow Road
McLean, Virginia 22102

European Computer Manufacturers' Association (ECMA)

Overview

Type of Group:	International manufacturers' standards organization
Mission:	To increase the use of information technology products, especially those of European manufacture; to standardize these products; and to promote those standards.
Headquarters:	Geneva, Switzerland
Established:	1960
Membership:	Open to any major manufacturer of information processing equipment in Europe, including multinational companies based outside Europe. There are approximately 44 members.
Digital Involvement:	Multinational company member; very influential
Voting:	One company, one vote; simple majority wins

Description

The European Computer Manufacturers Association (ECMA) is a nonprofit vendor association with no commercial activity. It was founded to represent all of the European manufacturers to the European nations. Most of the major European-based or domiciled computer vendors are members. ECMA makes standards recommendations for languages, data networks/OSI, magnetic disks, keyboards, character recognition, and other computer-related subjects.

ECMA has an interest in all standards except electrical standards. ECMA has an increasing role in information technology standardization and is also active in the telecommunications area. ECMA has formal agreements with CEN, CENELEC, and ETSI to ensure its members views are considered by these bodies.

ECMA passes its work to ISO/IEC and CEN/CENELEC for formalization of standards. ECMA standards are important because they build consensus and are often forerunners to ISO standards.

European Computer Manufacturers' Association (ECMA)

Goals

The key goals of ECMA are as follows:

- To study and develop, in cooperation with national and international bodies, methods and procedures to standardize the use of data processing systems
- To ensure the survival of the European point of view in data processing
- To see that the market expands at a rate that will guarantee financial success for the members
- To defend against any structuring of the market that would preclude substantial participation by European manufacturers
- To act as a group that would speak for all of the European manufacturers to the European nations

Deliverables

The key deliverables of ECMA are information technology standards, focused on areas of high interest to the European manufacturers.

Process

ECMA standards are approved by the ECMA general assembly, which is composed of computer manufacturers with European interests. ECMA has a category A-liaison with ISO with the right to fast-track standards that ECMA approves.

All activities are located in Europe.

Organization

The General Assembly is the highest authority of ECMA. Legal and operational responsibilities are delegated to a president, vice president, and a treasurer. The ECMA secretariat manages the ECMA budget.

Technical committees (TCs) are the foundation of ECMA. The Coordinating Committee, composed of six members elected by the General Assembly, determines when a new technical committee is needed, the scope of its work, the chairperson, and it reviews the progress of its work. Many ECMA TCs have a liaison with ISO groups, such as ECMA TC23 and ISO/OSI work, and many of the same people work in both areas.

European Computer Manufacturers' Association (ECMA)

Key TCs of interest to Digital are the following:

- TC 23 Open Systems Interconnection
- TC 22 Database
- TC 29 Document Architecture and Interchange
- TC 32 Communication, Networks, and Systems Interconnection
- TC 33 Portable Common Tool Environment (PCTE)

The Coordinating Committee is chaired by a Digital member who is also a member of the General Assembly.

For More Information

European Computer Manufacturers' Association
114, Rue du Rh5 ne
CH-1204 Geneva
Switzerland
Telephone: 4122 735.86.34
FAX: 4122 786.52.37

European Forum for Open Systems (EurOpen)

Overview

Type of Group:	International federation of UNIX and open systems user organizations
Mission:	To promote and advance the knowledge, use, and application of open systems
Headquarters:	United Kingdom
Established:	1990 as EurOpen; EUUG was established much earlier
Membership:	Open to national groups within western and eastern Europe. Membership includes 20 national groups representing over 4500 universities, colleges, and companies in these countries.
Digital Involvement:	Interested vendor; not a member
Voting:	Not applicable

Description

The European Forum for Open Systems (EurOpen), formerly known as the European UNIX Systems Users Group (EUUG), is an International federation of UNIX and open systems user organizations. Activities of EurOpen include the following:

- Conferences — EurOpen organizes two technical conferences each year. The national groups organize national events.
- Network — EUnet, a 1500-site computer network, connects members within Europe and provides access to all other major international networks.
- Publications — EurOpen publishes a quarterly newsletter, membership directory, an electronic mail directory, and proceedings. In cooperation with USENIX, EurOpen participates in the technical journal *Computing Systems* as a higher quality technical paper.
- Standards — EurOpen participates in standards activities.

- Working groups — EurOpen coordinates communication between national working groups dealing with end-user concerns. Coordination at the national level enables members to present a consolidated European view on subjects of interest.

Goals

The key goals of EurOpen are to do the following:

- Promote and advance the knowledge, use, and application of open systems. (They look at open systems as UNIX; however, they are now broadening their point of view to a standards board environment.)
- Facilitate the exchange of information and views on the use and development of open systems.
- Inform the public on open systems.
- Provide a focus for standardization of the techniques used in open systems.
- Encourage internationalization of open systems, for the benefit of users of open systems.

Deliverables

The key deliverables of EurOpen are conferences, access to the EUnet, and EurOpen publications.

For More Information

EurOpen
Owles Hall
Buntingford
Herts SG9 9PL
England
United Kingdom

European Telecommunications Informatics Services (ETIS)

Overview

Type of Group:	Dutch foundation
Mission:	To provide a forum where participants can discuss common concerns, implement joint actions, and improve customer services through the use of information technology
Headquarters:	Brussels, Belgium
Established:	1988 informally, 1991 formally
Membership:	Open to technical experts and information technology directors from the computing departments of the European telecommunications network operators. Now has about 23 participating European telecommunications companies.
Digital Involvement:	None, because Digital is not a telecommunications company
Voting:	Individual members with one vote per member, except on issues of internal administration when voting is weighted based on revenue

Description

The European Telecommunications Informatics Services (ETIS) was established by British Telecom. The organization was run very informally from 1988 to 1991 without any specific funding. The formal organization, established in June 1991, is funded by subscription and run by the European telecommunications companies.

ETIS has organized working groups and special interest groups in areas such as the following:

- Computer-Aided Software Engineering (CASE) tools
- Data standards
- Electronic Data Interchange (EDI)
- Generic software — common software applications

European Telecommunications Informatics Services (ETIS)

- Graphic systems
- Network management and security
- Office automation
- Open systems standards
- Shared network services providing mail, EDI, and shared data access between members
- Standard open systems enterprise architecture (Multivendor Integration Architecture (MIA)) for European communications

Goals

The key goals of ETIS are as follows:

- To reduce the cost of administration systems
- To improve service to business customers that have international and non-European needs

Deliverables

The key deliverables of ETIS are as follows:

- Specifications for general software applications (indirectly in the network administration)
- Common data standards and data repository standards
- Common network services — initially X.400 mail, but now moving to Electronic Document Interchange (EDI), conferencing, and data access
- Application architectures similar to NTT's Multivendor Integration Architecture (MIA)

Organization

The ETIS organization consists of the following:

- ETIS Management Board, which includes all members of ETIS
- Chairman of the Board, a rotating position, currently held by Telefonica (Spain)

European Telecommunications Informatics Services (ETIS)

- ETIS Council, currently composed of five European telecommunications companies, four elected members, and the chairman
- ETIS Central Office, which includes the director of ETIS

For More Information

European Telecommunications Informatics Services
Chef de Bureau
Boulevard Bisschofsheim 24
Brussels 1000 Belgium

M.I.T. X Consortium

Overview

Type of Group:	Vendor consortium
Mission:	To support the further development of the X Window System
Headquarters:	Cambridge, Massachusetts
Established:	1988
Membership:	Open to any organization.
Digital Involvement:	Active member; one of the founders. The following Digital groups have an interest in this consortium: DECwindows Program Office Paris Research Laboratory (PRL) Cambridge Research Laboratory (CRL) Personal Computer Systems Group (PCSG) Software Development Technologies (SDT) ULTRIX Engineering Group VMS DECwindows Group VMS Engineering Group Western Software Laboratory Western Research Laboratory
Voting:	Active participants

Description

The M.I.T. X Consortium was formed to support the continued development of the X Window System. The consortium is not a software house; rather, the consortium staff provides basic maintenance on the most fundamental X software, with major modifications and enhancements provided by participating organizations.

The consortium does not propose standards to national or international bodies or provide staff to such bodies. However, it will provide technical assistance and advice to standards bodies when requested.

M.I.T. X Consortium

Goals

The overall goal of the Consortium is to provide continued technical leadership for X software in a way that is consistent with M.I.T.'s historical role as a source of innovation.

Deliverables

The key deliverables of the X Consortium are as follows:

- Formal specifications for the standard components of the X Window System
- Periodic releases of a collection of materials (software and documentation) related to the activities of the Consortium
- Annual technical conference

Process

The X Consortium considers only those proposals sponsored by a member company of the X Consortium. For accepted proposals, the Consortium forms and controls work groups that are led by a small architecture team. The team reports to the Consortium Director. Member companies can include representatives on work teams. At the discretion of the X Consortium, work teams can include representation from nonmembers. Most of the design work takes place through electronic mail; the work groups schedule meetings only when needed.

Organization

The X Consortium, administered within the M.I.T. Laboratory for Computer Science (LCS), is organized as follows:

- The Consortium Director, the chief architect for all X specifications and software, reports to the Director of the LCS.
- An M.I.T. Steering Committee oversees the activities of the Consortium, sets policy and establishes goals, and provides strategic guidance and review of the Consortium's activities.
- An Advisory Committee of member representatives meets once or twice a year to review the Consortium's annual plans, assess its progress, and suggest future directions. Each member company can have one representative on the Advisory Committee. While the evolution of X is

influenced by the Advisory Committee, relevant decisions are vested in the Consortium Director.

- A full-time technical staff at M.I.T. supports the activities of the consortium, including architectural oversight, project leadership, software development and maintenance, production of distribution kits, and public relations activities. Member companies can contribute staff on short-term assignment to M.I.T. for specific implementation efforts sponsored by the Consortium.

Each member company appoints one or more technical liaison officers for Consortium activities. Liaison officers act as top-level links between the Consortium and the members to review design specifications developed by the Consortium, help in the selection of architecture team members, and provide general technical advice.

For More Information

Director
M.I.T. X Consortium, Room 217
Laboratory for Computer Science
545 Technology Square
Cambridge, Massachusetts 02139

Multivendor Integration Architecture (MIA) Consortium

Overview

Type of Group:	Vendor and supplier consortium
Mission:	To develop an architecture for building multivendor, distributed, information processing systems
Headquarters:	Tokyo, Japan
Established:	1988
Membership:	Open to users and vendors. Version 1 users were Nippon Telephone and Telegraph (NTT) and NTT Data Communications Systems Corporation (NTT DATA) (a wholly-owned subsidiary of NTT). Version 1 vendors were Digital Equipment Corporation Japan; IBM Japan, Ltd.; Fujitsu, Ltd.; Hitachi, Ltd.; and NEC Corporation.
Digital Involvement:	Originating member company
Voting:	Consensus; all members must agree on any major decision.

Description

NTT created Version 1 of the Multivendor Integration Architecture (MIA) Consortium as a joint research effort to define an open, multivendor architecture for their future procurements. The Version 1 consortium completed and dissolved in March 1991. The same membership will continue to refine this architecture over the next year or two. Starting in FY93, NTT and NTT DATA will use this architecture as the basis for procurements.

In the fall of 1991, NTT will create a new MIA Version 2 Consortium with different and expanded membership (more users are expected). Version 2 will address expanded architectural issues.

The MIA Consortium is moving the standardization process from vendor-driven to user-driven. NTT created the consortium to find a solution to their need for a multivendor transaction processing environment. Participating vendors have agreed to build systems to the agreed specifications. This process ensures there are both buyers and sellers and gives a focused resolution to the problem.

Multivendor Integration Architecture (MIA) Consortium

Goals

The key goals of the MIA Consortium are to adopt or develop the following:

- An application programming interface (API) between system software and applications to enable portability of conforming applications across all vendor's platforms
- A systems interconnection interface (SII) for communciations protocols to provide interoperability of conforming implementations between all vendor systems
- A human interface (HUI) for display and workstation operation to provide operational consistency across all applications

Deliverables

The key deliverables of the MIA Consortium are application and interoperability profiles.

Process

The MIA Consortium uses existing international standards where standards exist and adopts de facto standards where necessary. If no international or de facto standard exists, the consortium develops new technology. For example, the MIA Consortium has already adopted a transaction processing language based on Digital's Application Control Management Services (ACMS).

The following table shows the MIA Consortium working groups and their major areas of focus:

Working Groups	Subgroups
API	Languages, data interface, transaction processing
SII	OSI, base network management, protocol, TCP/IP
HUI	(No subgroups)
CASE	Computer-Aided Software Engineering (the CASE group was created late in Version 1; it will continue in Version 2)

These groups solicit proposals from the membership for appropriate interfaces or protocols. Once the MIA Consortium accepts a base proposal, they begin a period of refinements and extensions to it. Through numerous meetings and,

in many cases, almost continuous involvement, an agreed-upon architecture emerges.

Organization

The MIA Consortium has a governing body composed of two to three senior management representatives and is chaired by an NTT vice president. This body oversees the working groups, leads the technical work, and serves as the main decision-making body for all the internal and external MIA activities.

For More Information

Copies of the specifications that Digital contributed to MIA are available within Digital through DECdirect. For more information on these specifications, including order numbers, see the standards section in the corporate VTX infobase. For information on the VTX infobase, see Chapter 2.

More information about the MIA Consortium is available within Digital from:

Digital MIA Program Office
151 Taylor Street (TAY-1)
Littleton, Massachusetts 01460-1407

You can also contact the NTT location nearest you for information.

In the United States:
NTT America, Inc.
200 Park Avenue, Suite 2905
New York, New York 10166
Telephone: (212) 867-1511
FAX: (212) 286-8970

In Europe:
NTT Europe Ltd.
Level 9, City Tower
40 Basinghall Street
London EC2V5DE
United Kingdom
Telephone: 44-71-256-7151
FAX: 44-71-256-7997

Multivendor Integration Architecture (MIA) Consortium

In Japan:
NTT Inc.
1-6, Uchisaiwaicho 1-Chome,
Chiyoda-Ku, Tokyo 100, Japan
Telephone: 8-1-33-509-3101
FAX: 8-1-33-580-9104

NIST Computer Systems Laboratory (NIST/CSL)

Overview

Type of Group:	A United States Government organization
Mission:	To develop standards and test methods, and to conduct research on computer and related telecommunications systems
Headquarters:	Gaithersburg, Maryland
Established:	1965
Participation:	Open to the United States Government and industry
Digital Involvement:	Digital attends NIST-sponsored workshops and conferences.
Voting:	None

Description

The NIST Computer Systems Laboratory (NIST/CSL) is one of the major science and engineering research components of NIST. NIST (National Institute of Standards and Technology), formerly the National Bureau of Standards (NBS), is a United States government standards organization and is a part of the Department of Commerce.

NIST/CSL specializes in information technology standards for government use, and also advises and assists government agencies regarding information technology applications.

In the standards development organizations, NIST/CSL participates on an equal level with Digital as a key participant in the United States committees and in United States delegations to ISO.

Goals

The key goals of NIST/CSL are as follows:

- To develop standards and test methods for use by United States commerce at the direction of the Department of Commerce. NIST/CSL does not develop standards where voluntary bodies exist.
- To conduct research on computer and related telecommunication systems.

NIST Computer Systems Laboratory (NIST/CSL)

- To provide technical assistance to government and industry.
- To overcome barriers to the efficient use of computer systems, to the cost effective exchange of information, and to the protection of valuable information resources to computer systems.

Deliverables

The major deliverables of NIST/CSL are standards, test methods, accreditation, and test suites.

These pertain to the standardization of information technology systems, which includes software and hardware components.

In addition, NIST/CSL provides assistance to government agencies and industry in the field of information technology.

Process

NIST/CSL provides the above deliverables in several ways:

- Workshops

  These are forums where industry and government meet to discuss issues and to develop plans to meet the deliverables.

- Adaptation of industry work

  NIST/CSL participates in both accredited and nonaccredited standards development organizations. In doing so, NIST/CSL reviews and adapts standards and work-in-progress as federal standards. Often this adaptation involves some modification to the standard or specification.

- Research associate programs

  Industry groups, usually vendors, provide one or more people at no cost to NIST/CSL to work on the latest develoment efforts. Often the vendor provides other resources in the form of equipment and software.

For More Information

Director
NIST Computer Systems Laboratory
Gaithersburg, MD 20899

Object Management Group (OMG)

Overview

Type of Group:	Vendor and user consortium
Mission:	To promote the theory and practice of object-oriented technology in software development
Headquarters:	Framingham, Massachusetts
Established:	1989
Membership:	Open to software developers, computer system vendors, and software application users. Has over 100 members, including UNIX International and OSF.
Digital Involvement:	Digital joined in February 1990. Digital is a corporate member on the Board of Directors and a voting member of the technical committee. Digital groups that own responsibility for OMG are: TNSG, CIM, and IM&T.
Voting:	One company, one vote for corporate members

Description

The Object Management Group (OMG), an international nonprofit consortium, was founded by Hewlett-Packard and Apollo. The OMG was originally established to standardize object-based desktop software. It has now expanded into many system and application areas where object-oriented technology is applicable. The OMG is working to establish industry guidelines and object-management specifications that will apply to heterogeneous applications environments across a wide variety of hardware and operating systems.

Goals

The key goals of OMG are as follows:

- To promote an object-oriented environment for applications integration based on industry standards for a variety of platforms, such as MS/DOS, OS/2, and UNIX.
- To promote a framework for compatible and independent development of applications.

- To adopt an example of this framework. Examples submitted are: Digital's ACA Services and Hewlett-Packard's NewWave Object Management Facility and Programmatic Interface.
- To foster technological growth in the following areas:
  - Definitions, reference model, and terms
  - Application programming interfaces (APIs) for objects and applications
  - Distributed object management
  - Interfaces to object-oriented databases
  - Common services

Deliverables

OMG has the following key deliverables:

- Application programming interface (API) standards.
- Object-oriented technology specifications.
- *Object Management Architecture Guide*.
- Object World, a for-profit OMG corporation that provides training, holds conferences, trade shows, seminars, and other similar work. Object World has a business and training focus, not a technical focus.

Process

OMG uses the following technical committee process (one year or less timeframe):

- Establishes a task force.
- Defines technology requirements.
- Issues a Request for Information (RFI), if necessary.
- Issues a Request for Proposal (RFP), with Technical Committee (TC) approval. An RFP response requires a reference implementation, not just theory. OMG wants to license current implementations, not future theories.
- Evaluates technical and business submissions.

Object Management Group (OMG)

- Endorses the interface (API), not the implementation.
- Obtains approval from the OMG Board of Directors.

The public has access to submitted interfaces and documentation. Accepted technology implementation (source) is available for licensing to all OMG members.

A variety of special interest groups (SIGs) are active to allow the sharing of ideas for those with common interests that are not considered mainstream concerns of the OMG.

Work currently underway in the OMG includes the following:

- Object Request Broker

  Digital has submitted ACA Services as a proposal for Object Request Broker.

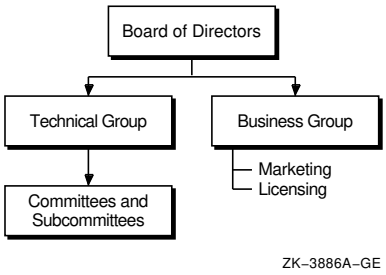
- Object Management Facility (OMF)

  Sun Microsystems, Inc. and Hewlett-Packard Company have jointly submitted a distributed OMF to the OMG. This submission uses object-management technology from Hewlett-Packard and distributed computing technologies from both companies. It is the only proposed technology that includes more than one networking protocol, thus furthering the multiplatform goals of the OMG.

Organization

A Board of Directors oversees OMG. It consists of about 25 members. Digital has a seat on the Board. Technical committees and subcommittees, appointed by the Board, discuss OMG concerns. This is where the bulk of the standards work is done. There are a number of small OMG executive-level committees that address OMG business and managerial issues. OMG has six salaried people: president, vice president/technical director, vice president of marketing, president of Object World, and two adminstrative employees.

Object Management Group (OMG)



For More Information

More information about OMG is available from the following:

- OMG Notes conference

  For information on the location of this conference, see the standards section in the corporate VTX infobase. For information on the VTX infobase, see Chapter 2.

- *OMG Object Management Architecture Guide*

  You can order this guide from the OMG or from the person listed in the standards section of the corporate VTX infobase under Who to Contact in Digital About OMG. For information on the VTX infobase, see Chapter 2.

- The OMG offices at one of the following addresses:

  Object Management Group
  492 Old Connecticut Path
  Framingham, Massachusetts 01701
  Telephone: (508) 820-4300
  FAX: (508) 820-4303

  Object Management Group
  Marketing Office
  3823 Birchwood Drive
  Boulder, Colorado 80304
  Telephone: (303) 444-8129
  FAX: (303) 444-8172

Open Document Architecture Consortium (ODAC)

Overview

Type of Group:	Vendor consortium
Mission:	To sponsor the development, support, and promotion of software that facilitates the interchange of documents between computer systems
Headquarters:	Brussels, Belgium
Established:	1991
Membership:	Open to computer system vendors. Has six corporate members, including Digital and IBM.
Digital Involvement:	Key corporate member
Voting:	One vote for each member company

Description

The Open Document Architecture Consortium (ODAC), originally called the International Standards Enabling Consortium (ISEC), focuses on documentation standardization. There are two documentation standards today:

- Open Documentation Architecture (ODA) and Interchange Format, similar to Digital's DDIF format.
- Standard Generalized Markup Language (SGML), similar to VAX DOCUMENT's SDML format.

ODAC focuses on ODA. ODA is a standard jointly defined by CCITT, ISO, and ECMA (ISO 8613). ODA documents can contain text, graphics, spreadsheets, and images. ODA is an object-oriented architecture, (documents are represented as hierarchies of objects that are instances of object classes).

Initial work in ODAC has focused on a toolkit for open systems that is based on the ODA standard. Digital's CDA (Compound Document Architecture) product is supplying the API for the ODA toolkit. CDA is an architecture that provides interchange among the formats of many standards, including ODA, DDIF, and SGML.

Open Document Architecture Consortium (ODAC)

Goals

The key goals of ODAC are as follows:

- To create a consistent and highly portable implementation that will ensure the interchange of documents across open systems
- To reduce the duplication of effort among vendors, thereby reducing the cost barriers associated with offering standards to the market
- To offer the toolkit through open licensing to minimize the entry costs for adoption of ODA
- To raise the focus on ODA from the data stream level to a level more appropriate for application developers through language independent application program interfaces (APIs).
- To upgrade the toolkit to track the evolution of the standard as it is extended through the ISO and CCITT processes

Deliverables

The key deliverables of ODAC are APIs for ODA and a toolkit for open systems based on ODA.

Long-term goals are to have the following products:

- Word Processing System Toolkit (approximately December 1992)
- Composite Document Toolkit (approximately December 1993)

Organization

The Consortium has three standing committees: a Board of Members, a Business Affairs Committee, and a Technical Committee. A salaried secretariat oversees both committees. An advisory group gathers proposals and recommendations from nonmembers.

For More Information

Open Document Architecture Consortium EEIG Secretariat
Avenue Marcel Thiry 204
B-1200 Brussels
Tel: (02) 774 91 11
Fax: (02) 774 96 90
Telex: 22125

Open Software Foundation, Inc. (OSF)

Overview

Type of Group:	International foundation of vendors, users, and independent software vendors (ISVs)
Mission:	To make available open systems technology based on industry standards and to advance the state of technology where standards do not exist
Headquarters:	Cambridge, Massachusetts
Established:	1988
Membership:	Open to anyone, including hardware vendors, software vendors, users, ISVs, and research and university organizations. Has more than 250 members worldwide. OSF is a member of X/Open and has a vote therein.
Digital Involvement:	Digital was a founding member. It is now a sponsor member, involved in all major user groups and special interest groups (SIGs) and also supplies technology to the Request for Technology (RFT) process. All software engineering groups within Digital have an interest in the OSF.
Voting:	Technology decisions are taken as executive staff decisions based on the criteria established by the RFT and the feedback on the submitted technology.

Description

The Open Software Foundation, Inc. (OSF) is a nonprofit research and development corporation founded by Digital and six other leading systems vendors. OSF was created in response to a need in the computer industry for a neutral supplier of leadership open software technologies and services.

OSF technology offerings are based on industry standards and include three components: specifications, reference implementations, and validation test suites. OSF selects technology from submissions made in response to its requests. The selection process is designed to be impartial and based on technical merit in meeting requirements.

Open Software Foundation, Inc. (OSF)

Goals

The key goals of OSF are as follows:

- To provide offerings based on relevant industry standards
- To use an open process to actively solicit inputs and technologies
- To use a timely, vendor-neutral decision process
- To provide early and equal access to specifications and software
- To supply hardware-independent implementations
- To supply technical innovations through universities and research
- To use reasonable and stable terms for licensing

Deliverables

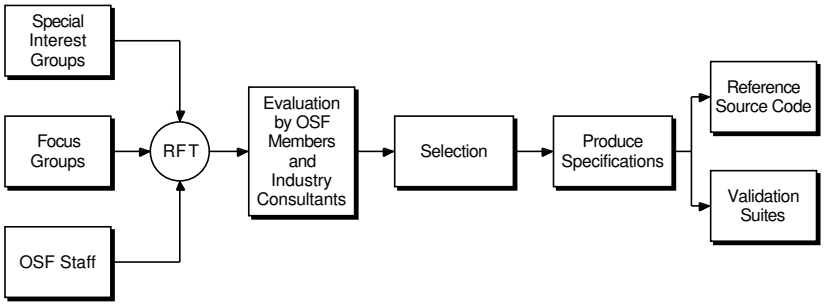
OSF produces specifications, reference implementations, and test suites for an open computing environment, such as the OSF/Motif windows interface, OSF/1-based operating system, and OSF Distributed Computing Environment (DCE). These environments are documented in the OSF Application Environment Specification (AES).

Process

OSF uses an open selection process, as follows:

- OSF takes input from special interest groups, focus groups, and the OSF staff to define the content and scope of the RFT.
- Members and industry consultants evaluate RFTs. They select technologies for OSF development.
- OSF produces a specification, reference implementation, and a validation suite, as shown in the next figure.

Open Software Foundation, Inc. (OSF)

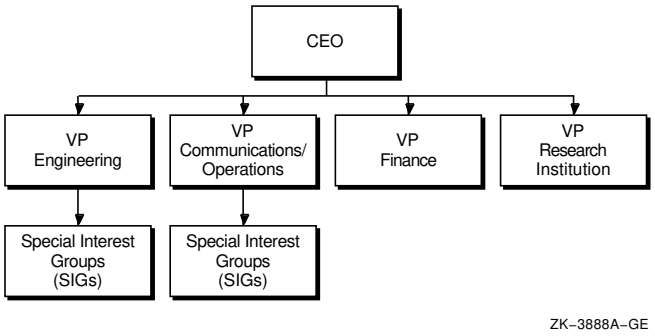


Digital has submitted the following to OSF:

- XUI user interface toolkit for OSF/Motif
- Four of the seven technology components of the Distributed Computing Environment (DCE)
- Technology for the Distributed Management Environment (DME) RFT
- Document Type Definition (DTD) for SGML in response to an RFT

Organization

The OSF CEO and vice presidents are salaried by OSF. Founding members of OSF (Digital and others) belong to the Board of Directors. The following figure shows the organizational hierarchy:



For More Information

More information about the OSF is available from the following:

- OSF Notes conferences

  For information on the location of these conferences, see the standards section in the corporate VTX infobase. For information on the VTX infobase, see Chapter 2.

- OSF marketing literature

  Marketing literature on OSF is available from Corporate Publications in Northboro, Massachusetts. For information on this literature, see the standards section in the corporate VTX infobase. For information on the VTX infobase, see Chapter 2.

- The OSF offices at one of the following addresses:

  In the United States:
  Open Software Foundation, Inc.
  11 Cambridge Center
  Cambridge, Massachusetts 02142
  Telephone: (617) 621-8700

  In Belgium:
  Open Software Foundation, Inc.
  Excelsiorlaan 32
  1930 Zaventem
  Belgium
  Telephone: +32.2.729.7851
  FAX: +32.2.729.7869

  In France:
  Open Software Foundation, Inc.
  2 Avenue de Vignate
  38610 Gieres
  France
  Telephone: +33.76.63.4863
  FAX: +33.76.51.0532

  In Germany:
  Open Software Foundation, Inc.
  Stefan-George-Ring 29
  8000 Munich 81 Germany
  Telephone: +49.89.930.930
  FAX: +49.89.930.3918

Open Software Foundation, Inc. (OSF)

In Japan:
Open Software Foundation, Inc.
11-10, Kita-Aoyama 2 chome,
Minato-ku, Tokyo 107 Japan
Telephone: +81.3.3479.4740
FAX: +81.3.3479.4760

Petrotechnical Open Software Corporation (POSC)

Overview

Type of Group:	User group
Mission:	To define and standardize, through an open process, an open systems platform for technical computing applications in the petroleum industry
Headquarters:	Houston, Texas
Established:	January 1991
Membership:	Open to corporations, businesses, government agencies, nonprofit organizations, and academic institutions. Has five sponsors and approximately ten members and is expanding daily.
Digital Involvement:	Member
Voting:	One vote for each sponsor, plus one vote for a representative elected from the membership

Description

The Petrotechnical Open Software Corporation (POSC) is a nonprofit membership corporation dedicated to the exploration and production segments of the oil and gas industry. It is patterned directly after OSF.

Digital is interested in POSC because Digital wants to do the following:

- Influence the direction of the POSC technology visions and ensure that the POSC technology decisions do not lock out Digital.
- Show Digital's commitment to the exploration and production market and to gain market intelligence through this cross section of customers.
- Ensure its own products are more responsive to market needs.
- Ensure that Digital is familiar with the POSC technology vision, so that Digital can support its customers as they evolve to this goal.

Petrotechnical Open Software Corporation (POSC)

Goals

The main goal of POSC is to define, through an open process, an industry-standard, open systems platform for technical computing applications in the petroleum industry.

Deliverables

Key deliverables of POSC are POSC 0.0 (base standards endorsements) and future releases of the following POSC specifications:

- POSC 1.0 (Exploration and production data model)
- POSC 2.0 (Application programming interface for data access)
- POSC 3.0 (User interface and style guide)
- POSC 4.0 (Utilities and tools)

POSC will license and distribute these specifications to those wishing to use them.

Organization

POSC is overseen by a Board of Directors. Officers include the chairman of the Board, vice chairmen, chief executive officer, director of operations, manager of development, manager of research, and a chief financial officer.

POSC has a two-tiered membership:

- Sponsors have a representative on the Board of Directors (three-year commitment).
- Members nominate one at-large director to represent them on the Board of Directors and vote for them (one-year commitment).

For More Information

Petrotechnical Open Software Corporation
10777 Westheimer, Suite 275
Houston, Texas 77042

Promoting Conference for Open Systems Interconnection (POSI)

Overview

Type of Group:	User and vendor consortium
Mission:	To promote OSI standards and manufacturing in accordance with those standards by exchanging information among the member companies and by cooperating with other groups worldwide
Headquarters:	Tokyo, Japan
Established:	1985
Membership:	Open to major computer manufacturers. Founded by Nippon Telephone and Telegraph (NTT).
Digital Involvement:	Not a member
Voting:	One vote for each member

Description

The Promoting Conference for Open Systems Interconnection (POSI) is the policy-making standards group among Japanese corporations. It participates in harmonization of functional standards, and international conformance testing.

The system for promoting OSI in Japan is complicated, and POSI plays a leading role in developing OSI policy. Most of the technical work is done by INTAP (Interoperability Technology Association for Information Processing). INTAP is responsible for both OSI profile development and conformance testing. INTAP is authorized and funded by the Ministry for International Trade and Industry (MITI). POSI was instrumental in initiating the OSI workshop in Japan in 1988.

Promoting Conference for Open Systems Interconnection (POSI)

For More Information

Promoting Conference for Open Systems Interconnection
Kikai Shinko Building
5-8-3, Shiba-Koen,
Manato-ku
Tokyo 105
Japan

SQL Access Group (SAG)

Overview

Type of Group:	Nonprofit corporation
Mission:	To develop a technical specification for the interoperability and portability of SQL-based applications across multiple relational database management systems (RDBMS) and hardware platforms
Headquarters:	No official headquarters, but requests for information can be sent to Digital in Nashua, New Hampshire
Established:	Founded by Digital and Tandem Computers in February 1989; the first official meeting was held in August 1989.
Membership:	Open to systems and software vendors and users. Has about 35 members who are either reviewers or producers. X/Open is a member.
Digital Involvement:	Member. Digital is active on all committees, a Board of Directors member, Treasurer, and Chairperson of the Technical Committees. The Digital Database Systems Interoperability Group owns responsibility for this group.
Voting:	Each member of the Board of Directors has one vote (about 15 members); reviewers can review only the group output.

Description

The SQL Access Group (SAG) is committed to define and prototype a database specification for interoperability and portability. The specification will enable SQL-based relational database management systems and application tools from multiple vendors to work together. This group acts as a catalyst to expedite interoperable SQL applications.

The SQL Access Group closely follows and complements the work currently underway by the ANSI and ISO committees and X/Open and OSF. It builds on existing ANSI, ISO, and other standards body work. The SQL Access Specification was submitted to ANSI, ISO, X/Open, OSF, and other organizations for review.

SQL Access Group (SAG)

Goals

The key goals of the SQL Access Group are based on the following principles:

- Interoperability — Heterogeneous relational database systems will be interoperable.
- Portability — ISVs will have a single set of sources that can universally access any SQL Access Server. Users can mix and match client software and server software. ISVs can write vendor-independent applications that execute on one computer platform and access data on another computer platform.
- Distributability — A single SQL Access application will be able to interoperate with multiple SQL Access Servers simultaneously; fewer gateways will be needed.

Product

The key product of the SQL Access Group is the SQL Access Specification. When published, this specification will be a part of the *X/Open Portability Guide*, Version 4 (XPG4).

Process

The SQL Access Group has monthly working meetings. The group has a Management Committee for discussion of marketing and legal matters, and a Joint Technical Committee that works on the technical overview of SQL standards. A Digital member chairs the technical committee.

Organization

The Management Committee consists of a chair, vice chair, treasurer, technical chair, and secretary. The Board of Directors consists of about 15 members.

For More Information

SQL Access Group
Digital Equipment Corporation
55 Northeastern Boulevard
Nashua, New Hampshire 03062
Telephone: (603) 884-5023

Standards Promotion and Application Group (SPAG)

Overview

Type of Group:	Vendor consortium
Mission:	To give guidance on the promulgation of a European information technology standards policy
Headquarters:	Brussels, Belgium
Established:	1983
Membership:	Open to information technology suppliers in Europe.
Digital Involvement:	Member company, with a representative on the Board of Directors.
Voting:	One vote for each member

Description

The Standards Promotion and Application Group (SPAG) was founded at the request of the European Commission (EC) to help formulate a European information technology standards policy. This policy was to provide a homogeneous and wider European market for information technology products.

In the resultant European policy, OSI implementation is targeted as the basis for public procurement for 17 European countries, and is to start in 1992. According to this plan, all member countries will eventually adopt the functional standards or profiles published as "European Standards." In the ideal and stable case, these standards and profiles will be identical to the equivalent International Standardized Profile (ISP).

With the initiation of the European Workshop on Open Systems (EWOS) in 1988, SPAG has moved its attention from profile development (the work that has been the basis for European Norms (ENs)) to conformance and interoperability testing.

Standards Promotion and Application Group (SPAG)

SPAG's major new work program is called SPAG PSI (Process to Support Interoperability). This program is a quality code of conduct for multivendors and is aimed at securing user confidence in open systems and stimulating product development in global networking. The three elements that make up the SPAG PSI are as follows:

- Product profile selection
- Conformance testing
- Interoperability testing

Eventually, vendors with products that have successfully passed the PSI process will be encouraged to display the PSI trademark wherever appropriate.

Goal

The key goal of SPAG is to develop conformance and interoperability for OSI products.

Deliverable

A future deliverable of SPAG is the PSI trademark.

Organization

Each member company has a representative on the Board of Directors.

For More Information

Standards Promotion and Application Group
Avenue de Louiza 149
Box 7
B-1050 Brussels, Belgium
Telephone: +32-2-535.08.11

UniForum

Overview

Type of Group:	Associations of open systems or UNIX system users
Mission:	To provide education to the membership on technical issues and standards and to provide a forum for the exchange of information between members and the industry.
Headquarters:	Santa Clara, California
Established:	1980
Membership:	Open to individual members, corporate sponsors, and affiliated user groups. Has about 6,500 individual members and about 51 corporate sponsors worldwide.
Digital Involvement:	Corporate sponsor
Voting:	Individual members with one vote for each member.

Description

UniForum, formerly known as the /usr/group, is a nonprofit, vendor-independent trade association that encourages the exchange of information about open systems and services. Members represent the high end of the open systems industry with a high level of purchasing authority for computer equipment.

UniForum's standards involvement includes active technical committees working on internationalization, performance measurement, realtime, security, and C++ issues.

UniForum has an affiliate group program that includes the following:

- UniForum Canada
- UniForum New Zealand
- UniForum South Africa
- UniForum United Kingdom

UniForum

In the United States, UniForum is a UNIX System V group. In the other affiliate groups, UniForum is a nonprofit trade association dedicated to the promotion of open systems. All affiliate groups are totally separate groups working together with a common collective goal. The affiliates receive no financial assistance from the United States UniForum and they are not in any way subordinate to it. This section includes information on the affiliate groups.

Much of the work of the UniForum technical working groups now feeds directly into IEEE's POSIX efforts. The 1984 /usr/group standard was the basis for IEEE's 1986 trial-use POSIX 1003.1 standard.

UniForum Canada

UniForum Canada is the Canadian association of open systems users. Members represent some of Canada's largest corporations, universities, and departments of the Canadian provincial and federal governments, such as:

- Northern Telecom
- Ontario Hydro
- Air Canada
- Bell Canada
- University of Toronto
- Department of National Defense
- Transport Canada
- Communications Canada

UniForum New Zealand

UniForum New Zealand began in 1983 as the New Zealand UNIX Systems User Group (NZUSUGI). It changed to UniForum New Zealand in 1989. Its mission is to promote open systems, not necessarily UNIX.

Members are both users and vendors and include approximately 30 corporate members and 130 individual members.

Deliverables of the group include:

- Two publications: NUZ and USR. NUZ, published bimonthly, contains information about the group's activities and industry news. USR,

published quarterly, contains in-depth technical articles by members or from international publications.

- Annual conference and exhibition.
- Regional meetings, held bimonthly.
- Library of related periodicals and books.

UniForum South Africa

UniForum South Africa was founded in 1988. It currently has about 800 members, including users, vendors, and service companies who have an interest in UNIX and open systems. Its mission is to promote UNIX and open systems in the Southern African information technology environment.

Group activities include exhibitions, seminars, technical meetings, and publications.

UniForum United Kingdom

For more information on UniForum United Kingdom, see the section titled UniForum United Kingdom in this chapter.

Goals

The key goal of UniForum in the United States (UniForum US) is to promote the UNIX operating system through the exchange of information and the cooperative efforts of its individual members.

Deliverables

The key deliverable of UniForum US is information exchange through:

- Annual and regional conferences
- Trade shows
- Seminars
- Guides on POSIX and related work
- Biweekly newsletter
- Monthly magazine

UniForum

- Annual products directory
- Technical committees that contribute to various standards efforts

Organization

UniForum US has a Board of Directors who are voted into their position by the membership. Board members participate for two years. One half of the board is up for election each year.

UniForum US has a number of working groups, including the following:

- User council, with many of the large United Kingdom corporations as members
- Trading standards and code of practice working group
- Open systems standards working group
- Government user group that is very large (all departments and agencies are members)

For More Information

UniForum U.S.
2901 Tasman Drive, Suite 201
Santa Clara, California 95054
Telephone: (408) 986-8840
FAX: (408) 986-1645

UniForum Canada
241 Gamma Street
Etobicoke, Ontario Canada
Telephone: (416) 259-8122
FAX: (416) 253-0441

UniForum New Zealand
P.O. Box 585
Hamilton, New Zealand
Telephone: 64-4/4950445
FAX: 64-4/711-223

UniForum

UniForum South Africa
P.O. Box 56413
Pinegowrie, Transvaal 2123
South Africa
Telephone: 27-11/789-1465
FAX: 27-11-886-5459

UniForum United Kingdom (UniForum UK)

Overview

Type of Group:	Open systems group
Mission:	To promote and assist in the adoption of open systems by British business and government
Headquarters:	Surrey, United Kingdom
Established:	1983
Membership:	Includes mostly open systems users and some suppliers
Digital Involvement:	Active corporate and trading member; has members on the Board, the trading standards group, the industry advisor group, and the conference advisor group
Voting:	Individual members with one vote for each member.

Description

UniForum United Kingdom (UniForum UK) is an independent, nonprofit organization originated as the /usr/group/UK. It is funded by the information technology community.

Goals

The key goal of UniForum UK is to promote the delivery of open systems through the exchange of information and the cooperative efforts of its individual members.

Deliverables

The key deliverables of UniForum UK are a monthly magazine called *Open Forum*, which is distributed to 12,500 people every month, and a very influential *Open Systems Guide and Directory*.

UniForum United Kingdom (UniForum UK)

Organization

UniForum UK has a full-time director of operations and staff who report to the Board or Directors. They are responsible for the special interest groups and working committees, including the following:

- Trading standards council, which is producing a procurement procedures guide
- Government user group
- UniForum UK user council with corporate members, which provides a communication channel for UK user requirements

The government user group has over 70 departments and agencies as members. The user council and the membership have many of the United Kingdom's Times 1000 companies as members. No other user group, especially in UniForum, has such a large government and commercial group of active members.

For More Information

UniForum UK
9-11 EBC House
Richmond Station Building
Kew Road
Richmond-upon-Thames
Surrey TW9 2NA
England
Telephone: 44/81-332-0446
FAX: 44-81-332-0448

UNIX International, Incorporated (UI)

Overview

Type of Group:	Independent company
Mission:	To ensure the integrity of the de facto industry standard, UNIX System V, and to guide its future growth as a standard
Headquarters:	Parsippany, New Jersey
Established:	1988
Membership:	Open to anyone worldwide who is interested in the standardization, extension, and use of UNIX System V, including industry and government vendors and users. Currently has about 230 members.
Digital Involvement:	Digital is not a member. Most computer vendors are either a member of UNIX International or the Open Software Foundation (OSF). A small number are members of both.
Voting:	Technical recommendations are agreed to by the UI steering committee and forwarded to AT&T/USL for action. See the Process section for more information.

Description

UNIX International, Incorporated (UI) is an independent company founded by American Telephone and Telegraph (AT&T) in association with other UNIX-based system vendors. UI is primarily a marketing entity for the following:

- Collecting information about trends and needs in the market
- Participating in standards definition and development, such as in the ISO, X/Open, and the X Consortium
- Establishing specifications that are proposed to UNIX Systems Laboratories (USL), the AT&T subsidiary that has responsibility for UNIX-based software
- Promoting the developments realized by USL
- Promoting System V-based systems as the system of choice

UI members are not required to implement UI developments.

Digital is interested in UI for the following reasons:

- UI has some interesting technology working groups, such as real time, multiprocessing, system management, and transaction processing.
- Digital must be aware of all widely accepted industry specifications. If they become recognized as standards, Digital may wish to offer customers the new technology.

Goals

The main goal of UI is to promote UNIX System V developments and technologies. To provide substance to this largely marketing role, UI has the following secondary goals:

- To provide direction to USL on System V development
- To continue to build on UNIX System V.4 to make it the Open Systems platform standard
- To improve UNIX System V by incorporating new technology developed by the broad user community
- To provide open opportunities for the community to participate in defining and building the future of UNIX System V
- To specify an architecture for an open systems environment that entails architectures and technologies for distributed computing, corporate hub computing, and desktop computing

Deliverables

UI produces marketing information and draft technical specifications for USL.

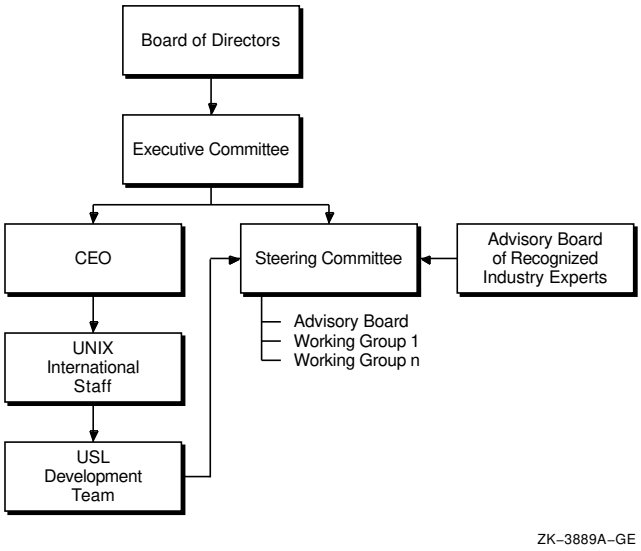
Process

Technical recommendations are agreed to by the UI steering committee and forwarded to AT&T/USL for action. Since USL is independent and controls the content of both the SVID and UNIX System V releases, the recommendations of UI are not necessarily binding (similar to the relationship of DECUS and Digital) and are subject to change by USL with review by the UI steering

committee. USL makes the make/buy decision for all new technology and controls source code licensing. UI controls all specific copyright and licensing. USL writes the final specifications that UI then markets.

Organization

The Board of Directors oversees UI. Major discussion topics are assigned to working groups. The following figure shows the UI organization:



For More Information

AT&T Customer Information (contact for UNIX publications)
P.O. Box 19901
Indianapolis, Indiana 46219
Telephone: 1 (800) 432-6600

UNIX International, Incorporated
20 Waterview Boulevard
Parsippany, New Jersey 07054
Telephone: 1 (800) 848-6495

User Alliance for Open Systems (UAOS)

Overview

Type of Group:	User group within the Corporation for Open Systems (COS)
Mission:	To overcome barriers to achieving an integrated environment for business information
Headquarters:	McLean, Virginia
Established:	1990
Membership:	Open to North American users of information systems who have been active in working for the adoption of open systems. Users come from a broad range of industries, including aerospace, finance and banking, chemical, petroleum, pharmaceutical, automotive, and governmental agencies and departments (NIST), and others.
Digital Involvement:	Interested vendor; not a member — only users can join
Voting:	One vote for each member

Description

The User Alliance for Open Systems (UAOS) is a group of end users concerned with the future of open systems. This group was originally called the Atlanta 17 (17 attendees in Atlanta in February 1990), and later the Houston 30 (30 attendees in Houston in May 1990).

UAOS is now part of the Corporation for Open Systems (COS). However, membership in UAOS does not automatically enable members to participate in COS activities.

UAOS is a user group. It is interested in vendor input, such as from Digital, but it does not want vendors to dominate or overly influence its work. UAOS is not endorsing any operating system, but discussions seem to favor POSIX.

User Alliance for Open Systems (UAOS)

Goals

The key goals of UAOS are as follows:

- To identify barriers to the development of open systems
- To develop strategies to overcome the barriers
- To develop a process for specifying user requirements for open systems
- To state the user requirements, such that they can be a guide for vendors designing and offering open systems

Deliverables

UAOS will produce a set of user open system requirements and specifications, which it expects vendors to use in producing products. The initial deliverables from this group will be the following:

- A list of nine barriers to the development of open systems, ways to overcome the barriers, and action plans for UAOS
- A generic requirements document that will define open system needs from the user perspective (future document)

Process

The UAOS is organized into a group of subcommittees whose responsibility is to develop the documents and deliverables specified in the UAOS charter. A representative from one of the user organizations chairs the subcommittees. The subcommittees meet independently and report back to the UAOS plenary meetings, which are usually held semiannually.

Organization

UAOS is a part of the Corporation for Open Systems (COS). UAOS is composed of various levels of dues-paying members, primarily users.

User Alliance for Open Systems (UAOS)

For More Information

Corporation for Open Systems
User Alliance for Open Systems
1750 Old Meadow Road
Suite 400
McLean, VA 22102-4306

X/Open

Overview

Type of Group:	International nonprofit company
Mission:	To bring greater value to computer users through implementation of open systems
Headquarters:	Based in Reading, England with offices in the U.S. (East and West coast) and Japan
Established:	1984
Membership:	Full membership (representation on Board of Directors and vote in X/Open technical decisions) is limited to major computer vendors (with CPU revenue in excess of $500,000). Advisory committee membership is open to users, independent software vendors, and smaller vendors. Has approximately 21 major shareholders, including OSF and UNIX International. Overall membership is about 81 companies.
Digital Involvement:	Digital became the first U.S. member in 1986. It is now an active member. Digital employees are involved in all of the X/Open working groups and in marketing and administrative functions. All software engineering groups within Digital have an interest in the X/Open.
Voting:	Majority vote of the Board of Directors present. Selection of new interfaces in the Common Application Environment requires a 75 percent majority vote of the Board of Directors present.

Description

X/Open, an international company incorporated under British law, is a consortium of many of the world's largest computer system manufacturers. X/Open is dedicated to the creation of an open systems application environment called the Common Application Environment (CAE). The CAE is internationally supported, vendor-independent, based on industry standards, and developed and marketed by X/Open vendors.

Digital is interested in X/Open for the following reasons:

- It wants open systems to be defined by interface specifications that are controlled by a neutral industry body, not by a specific implementation.
- X/Open is aligned with formal industry standards, such as POSIX, but also goes beyond these to provide a more complete application environment.
- X/Open is the most complete such environment today, and provides Digital with the best alternative to an open system based on an implementation. This environment is defined now and does not require a UNIX-based product.
- Users think it is important. The CAE is specified by many government procurement agencies.

X/Open has three affiliated councils for users, independent software vendors, and system vendors. The following section contains information on the X/Open User Council.

X/Open User Council

The X/Open User Council is an affiliate organization composed of major corporations and government agencies from around the world. Members are represented on the X/Open board and have access to all strategic and technical activities of X/Open.

The mission of the User Council is to provide cross industry and international user input to the development of interoperable and portable systems. Members work in partnership with X/Open to do the following:

- Identify open systems requirements
- Establish strategies that support open systems
- Identify supply shortages
- Create incentives for suppliers to meet the open systems needs

X/Open

Goals

The key goals of X/Open are as follows:

- To establish X/Open as the organization acknowledged to be driving open system requirements and specifications that are followed by OSF and UNIX International
- To create specifications for application portability and system connectivity through the selection and endorsement of a series of common interfaces
- To coordinate the development of the CAE
- To adopt existing industry and de facto standards into the CAE
- To offer branding and verification programs

Deliverables

X/Open does not produce standards, but it is working on the following:

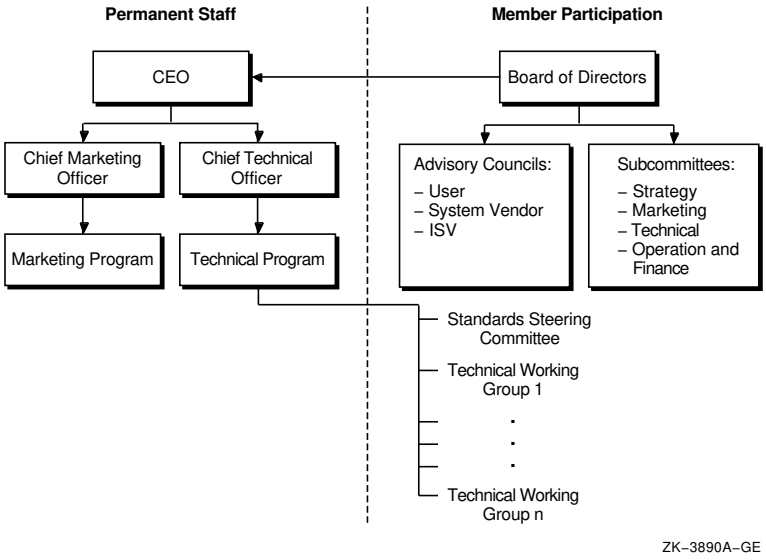
- Specifications for portability and connectivity.
- CAE, a collection of endorsed programming interfaces for a set of application services.
- X/Open Portability Guide (XPG), a multivolume document that contains all the CAE interfaces. XPG3 is the current third edition of this document.
- Validation suite (VSX) for some components of each version of the CAE.
- Verification and branding program, a licensing program allowing licensees to use and advertise the X/Open brand on qualifying products.
- XTRA Project, a project whose goal is to develop a guide for open system requirements and to align X/Open's programs to meet these needs.
- Prospectus of Market Demand (POMD), a document that communicates X/Open's directions for open systems.

Organization

X/Open has a permanent staff of about 40 people that is overseen by a membership Board of Directors that meets four times per year. The Board of Directors has subcommitees to address X/Open strategy, marketing and external liaisons, technical issues, and operation and finance.

X/Open has three advisory councils made up of users, systems vendors, and independent software vendors (ISVs) to allow a wider open process for the exchange of information and participation.

The following figure shows the X/Open organization:



For More Information

More information about X/Open is available in the *X/Open Information Kit* available through the Geneva office and from the following X/Open locations:

In the United States:
X/Open Company, Ltd.
1010 El Camino Real, Suite 380
Menlo Park, California 94025
Telephone: (415) 323-7992
FAX: (415) 323-8204

X/Open

In Japan:
X/Open Company Ltd.
Karufuru-Kanda Building, 9F
1-2-1 Kanda-Suda-cho
Chiyoda-Ku, Tokyo 101 Japan
Telephone: 81-33-251-8321
FAX: 81-33-251-8376

In Europe:
X/Open Company Ltd.
Apex Plaza, Forbury Road
Reading, Berkshire RG1 1AX
United Kingdom
Telephone: 44-734-508311
FAX: 44-734-500110

A

Digital Testing Laboratories for Standards Conformance

This appendix describes the following Digital testing laboratories for product testing:

- Networks Performance and Conformance Engineering (NPACE)
- Systems Integration Engineering (SIE)
- Systems Quality Management (SQM)

For more information on conformance testing, see Chapter 5.

Networks Performance and Conformance Engineering (NPACE)

Overview

Type of Testing:	Performance and conformance testing for Open Systems Interconnect (OSI), DECnet, and Terminal Control Protocol/Interchange Protocol (TCP/IP) related products
Purpose:	Test implementations of networking protocols, both Digital-specific and internationally defined, for performance and architectural conformance
Location:	Based in Littleton, Massachusetts (LKG), with groups also located in Reading, England (REO) and Brisbane, Australia (OZY). NPACE has plans to start a small group in Yokohama, Japan soon.
Output:	A final report describing the testing done and the outcome
Test certificates:	When applicable, NPACE issues the following certificates of approval: • COS mark for OSI conformance • United States Government OSI Profile (US GOSIP) approval for OSI protocols • Certificate of testing for European testing • OSTC (Open Systems Testing Consortium) and UK GOSIP certificates of testing for European requirements • Certificate of testing for DCA TCP/IP NVLAP testing

Networks Performance and Conformance Engineering (NPACE)

Description

Networks Performance and Conformance Engineering (NPACE) offers three types of testing services:

- Performance testing
  - Tests products to determine the speed at which they operate.
  - Offers a performance design analysis service for development organizations to help them build performance into their implementations.
- Conformance testing
  - Operates accredited laboratories for the United States National Voluntary Laboratory Accreditation Program (NVLAP). These laboratories test for TCP/IP and OSI and use industry-standard (approved) test tools and test suites.
  - Operates an accredited testing facility for the Corporation for Open Systems (COS), using COS tools.
  - Is working to establish a NAMAS (British National Measurement Accreditation Service) accredited testing laboratory in the UK, for UK GOSIP approved testing.
- Multivendor interoperability testing for Digital's networking products (such as OSI and TCP/IP)

  For OSI, this testing is done world-wide through OSInet, EurOSInet, and OSIone. Results of this testing are registered in various government and private interoperability testing registration databases (such as for US GOSIP).

In addition, NPACE develops and makes the following available for use by Digital development groups:

- Test tools for use internally and also for Digital's strategic partners to use in testing protocol implementations.
- Test suites for the following:
  - Digital Network Architecture (DNA)
  - Open Systems Interconnect (OSI)
  - Terminal Control Protocol/Interchange Protocol (TCP/IP)

Networks Performance and Conformance Engineering (NPACE)

NPACE is responsible for defining Digital strategy in the areas of conformance and performance, and drives this strategy to successful adoption through representation in external technical forums, such as the following:

- ANSI (X3 T5.1)
- BSI
- ISO SC21/WG1
- COS (architecture committee)
- OSInet (steering and technical committees)
- SPAG (various committees)
- EWOS (various expert groups)
- UK Chorale Consortium (various)

Standards Testing

NPACE tests against the following networking standards:

- Digital Network Architecture (DNA) standard (DEC Standard 200)
- ISO/OSI Standards (only for DECnet–ULTRIX and DECnet–VAX; it includes standards such as HDLC, ISO 8802/2 and 8802/3, Connectionless Network Service, Transport Classes 0, 2, and 4, FTAM, CCITT X.400, ENV 4200)
- TCP/IP Standards (TCP, IP, BOOTP, SNMP, TELNET)

Audience

The NPACE audience varies, depending on the type of testing.

- For performance testing, the customers are as follows:
  - Digital internal development organizations. NPACE helps them to build the desired levels of performance into their hardware and software implementations.
  - External customers. NPACE's work is published in the Networks and Communications Buyer's Guide. NPACE helps Digital's external customers to select the networking components that best fit their needs based on performance criteria.

Networks Performance and Conformance Engineering (NPACE)

- For conformance testing, the primary customers are Digital internal development organizations. NPACE also provides tools and test suites to the following groups:
  - Digital's strategic partners for testing their implementations of networking protocols.
  - Third parties for testing their implementations. NPACE will help establish a key third party as a Digital authorized testing center.

Systems Integration Engineering (SIE)

Overview

Type of Testing:	Open systems standards verification, including NIST FIPS 151 (National Institute of Standards and Technology Federal Information Processing Standard 151)
Purpose:	Verify conformance of Digital-supported platforms to open systems industry standards, providing test results and analysis in preparation for certification
Location:	Salem, New Hampshire (NIO)
Output:	Test report summarizing the test results
Test certificates:	None

Description

Systems Integration Engineering (SIE) is part of Manufacturing and Design Technology (MDT). SIE performs systems verificaton tests, generally in large complex environments representative of Digital's largest customers. Individual test areas include, but are not limited to:

- Systems verification tests for the technical methodology in Digital Standard 072
- Systems verification tests to support the VAXcluster revision matrix (RM) document and VAXcluster configuration guide, including new system components and interconnection alternatives
- Systems evaluation and verification tests of complex configurations for major customer issues, such as for DuPont
- Systems verification and application debug and stress testing for strategic Enterprise Integration Services (EIS) accounts, such as Boeing/SMARTS
- Systems verification tests for accepted open systems industry platform standards, such as for FIPS 151 and XPG3 for VMS/POSIX, NAS packages, and others

Systems Integration Engineering (SIE)

SIE employs about 60 people with skills in the following areas:

- Platform configuration, installation, tuning (VMS systems, ULTRIX systems, OS/2, MS–DOS, OSF/1, SCO UNIX, VAX SYSTEM V)
- Platform-level test and data analysis
- Test tool and test script generation (VAX RTE and third-party tools)
- Performance analysis, workload, and resource modeling

Standards Testing

SIE is currently doing the following activities:

- VMS/POSIX (VIP) testing
- VMS X/Open testing
- NAS platform certification
- IEEE 1003.3 participation
- POSIX Conformance Test Suite (PCTS) beta test site

Audience

SIE performs testing for both Digital internal customers and external customers. External customers cannot initiate work directly with SIE. They must contact the appropriate Digital account manager or development group who negotiates with SIE and sets up the funding process. Once SIE begins work with an external customer, the customer can then work directly with SIE.

Systems Quality Management (SQM)

Overview

Type of Testing:	Installation and software compatibility tests for operating systems; operating system, application installation, and software compatibility tests for CPU's; software integration and interoperability tests for distributed services; and software compatibility, interoperability, and security tests for application frameworks and applications
Purpose:	Software quality testing of requirements, tools, and qualification in support of integrated information systems
Location:	Globally distributed group, based in Nashua, New Hampshire (ZKO), with groups also located in Reading, England (REO) and Yokohama, Japan
Output:	For the requirements and design phase, output is technical and contains process requirements and proactive consulting on requirements. During the implementation phase, SQM produces a report that documents problems, results, and suggestions for solutions.
Test certificates:	None for external; internally, certification is performed for software releases to software manufacturing.

Description

The Systems Quality Management (SQM) group provides the following software development for life cycle support:

- Proactive software quality consulting for software quality tools/methods and for software quality and technical integration requirements
- Life cycle quality tools for the quality process and for the qualification process (test generation from specifications, porting of selected industry standard test suites, and others)

- Software compatibility, installation, security, interoperability requirements, laboratories, and qualification for the following:
  - Compliance to VMS and ULTRIX technical requirements
  - NAS Services interoperability
  - VMS and ULTRIX software compatibility
  - Customer software installability
- Engineering and field information on software integration for software dependency information and for software attribute registration

Standards Testing

SQM tests against the following Digital internal standards:

- Digital Standard 041, Customer Installability: Product Requirements
- Digital Standard 038-1, Systems Evaluation of New Products — Software
- Digital Standard 038-2, Systems Evaluation of New Products — Hardware
- Digital Standard 066-3, Policy for Designing Products for All Countries Designated as Strategic Markets
- Digital Standard 017, Internal Implementation of ISO 9000
- NAS interoperability and certification requirements for NAS service components
- NAS interoperability and certification requirements for NAS applications
- VMS technical requirements
- ULTRIX technical requirements

Audience

SQM currently performs testing for Digital internal customers, but is looking at solutions testing for third-party applications integration in the ULTRIX and VMS system families. SQM services the following Digital groups:

- The New Software Group (TNSG)
- VMS Systems and Servers (VSS)
- UNIX-based Software Systems (USS)

Systems Quality Management (SQM)

- Personal Computer System Products (PCSP)
- Enterprise Integration Services (EIS)
- Networks and Communications (NaC)
- Product marketing and services

B

Standardization Cost Worksheets

The objective of costing resources is to identify the absolute costs attributed to standards activities. You can then use these costs to identify the costs and benefits of the standards effort. The percent of standards effort to the base engineering effort is an indicator of the investment requirements for standardizing that technology.

Once you arrive at an estimate of the costs, you must then analyze the returns from the effort and weigh both when making the decision whether or not to standardize. It is important to consider how much your market opportunities will be limited if you decide not to standardize.

This appendix describes two cost worksheets for estimating standardization costs: one for individual components and another for an entire program. The worksheets are generic and applicable to any standards submission, whether you are submitting technologies to a consortium or submitting architecture recommendations to a standards body.

For more information on determining standardization costs, see Chapter 6.

B.1 Levels of Involvement

When using the worksheets to analyze costs, you should estimate costs for four levels of involvement in standardization:

- Submit technology and win (a win is when 70% or more of the technology is accepted by the standards group)
- Submit technology, but fail to win
- Participate in the standardization process for leverage or influence, for strategic alliances, or for strategic efforts
- Wait and follow the emerging standard (and possibly be faced with reengineering costs to support the new technology)

B.2 Estimating Individual Component Costs

To estimate the costs of standardization for an individual component, use the worksheet in Example B–1. Each numbered step in the following list matches the numbered steps in Example B–1. Example B–2 is a sample of a completed cost worksheet for submitting the CMA component in the DCE to OSF submission.

Complete the following sequence of steps four times, once for each of the scenarios for levels of involvement: submit and win, submit but fail to win, participate in the process, and wait and follow.

1. Indicate the submission, such as DCE to OSF.
2. Indicate the component affected by the submission, such as CMA.
3. Indicate the standards scenario, such as submit and win.
4. Identify the total existing resources required for the component. These include all staff for engineering, management, documentation, product management, marketing, and training. Indicate the start year of the project for each resource category.
5. Determine the technology costs. Project the existing resources (engineers and supervisors) over the product life of the component. Divide the resource projections into three categories:
   - Base technology resources (BR) for engineering a proprietary product
   - Incremental resources (IR) for standard representation and technology submission
   - Reengineering resources (RR) for changing an existing product to a standards-compliant product
6. Total all resources over the life of the component product.
7. Identify reengineering costs that are not directly related to the component group, such as layered products that use the component, or field costs for retraining sales and service resources.
8. Determine the functional costs. Identify functional resources for each component (documentation, product management, marketing, and training). Divide functional resources in the same manner as technical resources: base resources (BR), incremental resources (IR), and reengineering resources (RR).

9. Repeat steps 1 to 8, projecting changes in resources based on the other three scenarios (for example, submit but fail to win, participate in the process, and wait and follow).

B.2 Estimating Individual Component Costs

Example B–1 Cost Worksheet for Standardization of Individual Components

Standardization Cost Worksheet for an Individual Component

1 SUBMISSION: _____

2 COMPONENT: _____

3 SCENARIO: _____

4 RESOURCES:	Number	Start Date
Engineering	_____	_____
Management	_____	_____
Documentation	_____	_____
Product Management	_____	_____
Marketing	_____	_____
Training	_____	_____

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
PROJECT TOTAL RESOURCES:							
Engineering	___	___	___	___	___	___	___
Management	___	___	___	___	___	___	___
Documentation	___	___	___	___	___	___	___
Product Management	___	___	___	___	___	___	___
5 ENGINEERING COSTS:							
Base Technology	___	___	___	___	___	___	___
Incremental	___	___	___	___	___	___	___
Reengineering	___	___	___	___	___	___	___
6 TOTAL ENGINEERING COSTS:	====	====	====	====	====	====	====
7 ADDITIONAL REENGINEERING:							
Layered Products	___	___	___	___	___	___	___
Service/Field Readiness	___	___	___	___	___	___	___
8 FUNCTIONAL COSTS:							
Product Management	___	___	___	___	___	___	___
Documentation	___	___	___	___	___	___	___
Marketing	___	___	___	___	___	___	___
Training	___	___	___	___	___	___	___

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Example B–2 Sample Cost Analysis of Submitting CMA

Standardization Cost Worksheet for an Individual Component

1 SUBMISSION: DCE TO OSF

2 COMPONENT: CMA

3 SCENARIO: Submit and win

4 RESOURCES:

	Number	Start Date
Engineering	4	1988
Management	1	–
Documentation	1	May 1990
Product Management	1	July 1990
Marketing	0	–
Training	0	–

	Year 87	Year 88	Year 89	Year 90	Year 91
PROJECT TOTAL RESOURCES:					
Engineering	0	4	4	4	3
Management	0	1	1	1	1
Documentation	0	0	0	1	1
Product Management	0	0	0	1	1
	0	5	5	7	6
5 ENGINEERING COSTS:					
Base Technology	–	3.5	3.0	2.5	2.5
Incremental	–	.5	1.0	1.0	.5
Reengineering	–	–	–	.5	–
6 TOTAL ENGINEERING COSTS:		4.0	4.0	4.0	3.0
7 ADDITIONAL REENGINEERING: *					
Layered Products	–	–	–	–	–
Service/Field Readiness	–	–	–	–	–
8 FUNCTIONAL COSTS:					
Management BR:	–	1.0	.5	.5	.5
IR:	–	–	.5	.5	.5
Product Management	–	–	–	1.0	1.0
Documentation BR:	–	–	–	1.0	1.0
Marketing	–	–	–	–	–
Training	–	–	–	–	–

* Layered product reengineering is virtually zero because it is managed from the beginning using two APIs and because CMA is not an end–user product.

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B.3 Estimating Total Program Costs

To estimate the total program costs of standardization, use the worksheet in Example B–3. You will be combining the cost estimates from all individual component cost worksheets. The list of numbered steps in the following example matches the numbered steps in Example B–3.

Complete the following sequence of steps four times, once for each of the scenarios for levels of involvement: submit and win, submit but fail to win, participate in the process, and wait and follow.

1. Indicate the submission, such as DCE to OSF.
2. Indicate the standards scenario, such as submit and win.
3. Identify the total existing resources for all components of the submission. These include all staff for engineering, management, documentation, product management, marketing, training, and legal resources.

   Indicate the start year of the project for each resource category.
4. Project the existing engineering resources (engineers and supervisors) over the product life of the components. Divide the resource projections into four categories:
   - Base technology resources (BR) for engineering a proprietary product
   - Incremental resources (IR) for standard representation and technology submission
   - Reengineering resources (RR) for changing an existing product to a standards-compliant product
   - Integration resources (INTR) (optional) for acting as the integrator of technologies that have been submitted to a consortium that requires they be delivered to their customers as an integral set. For example, IBM was awarded integration of DCE for the OSF. IBM employs approximately six to eight resources for this effort.
5. Identify program level submission resources from inception through phase-down. These include program management, product management, documentation, marketing, and training.
6. Roll up the costs for each component and for the program level submission to arrive at the total costs based on the first scenario (for example, submit and win).

7. Repeat steps 1 to 6, projecting changes in resources based on the other three scenarios (for example, submit but fail to win, participate in the process, and wait and follow).

B.3 Estimating Total Program Costs

Example B–3 Cost Worksheet for Standardization of an Entire Program

Standardization Cost Worksheet Submission and Program Rollup

1 SUBMISSION: _____

2 SCENARIO: _____

3 RESOURCES:	Number	Start Date
Engineering		
Management		
Documentation		
Product Management		
Marketing		
Training		

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
PROJECT TOTAL RESOURCES:							
Engineering							
Management							
Documentation							
Product Management							
4 ENGINEERING COSTS:							
Base Technology							
Incremental							
Reengineering							
Base Technology							
Layered Products							
Service/Field Readiness							
Integration							
5 PROGRAM COSTS:							
Product Management							
Product Management							
Documentation							
Marketing							
Training							

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C

Case Study: Quantifying the Cost of Reengineering for DECwindows Motif

This appendix shows an analysis of the submission of DECwindows Motif to the Open Software Foundation (OSF). The goal of this submission was to maximize return while avoiding costs.

The sections in this appendix show the costs in each of the following areas:

- DECwindows Motif technology
- VMS and ULTRIX underlying systems
- Three layered products:
  - CDA Viewers (layered technology)
  - DECwrite (layered application with heavy use of DECwindows Motif)
  - Paint (layered application with minimal use of DECwindows Motif)

None of these cases was straightforward. Managers often delayed decisions for political (internal and external) reasons or because they had no business model.

The numbers shown in the samples are approximate.

C.1 DECwindows Motif Technology

When the DECwindows API was accepted by the OSF, Digital expected to change about 5 percent of the API. Hewlett-Packard was designated as the integrator; their task was to take the DECwindows API and merge it with the Hewlett-Packard API.

C.1 DECwindows Motif Technology

The final percentage of change to the DECwindows API was about 30 percent. The increased changes were probably due to the following:

- Integration of the two technologies — 5 percent
- Hewlett-Packard's lack of knowledge of the Digital XUI (although Digital offered consultation services) — over 30 percent
- Political (internal and external) reasons — unknown impact

The changes took approximately one year of work by the engineering team (about 15 to 20 people). This is about a 30 percent rework. At the time, DECwindows had nearly 30 applications (Digital and third-party) that were dependent on DECwindows.

C.2 VMS and ULTRIX Systems for DECwindows Motif

The VMS system took approximately two person-years of rework. The conversion took about one year longer because standard widgets were not used. Fileview was a major factor in the VMS system conversion.

The ULTRIX system took about one person-year of rework.

C.3 Layered Products

The following layered products were also reworked for DECwindows Motif:

- CDA Viewer

  The changes in DECwindows cost the CDA program approximately two to six person-months. This is about 30 percent of the total investment to date in the user interface portion of the Viewers development, which is approximately 30 percent of the total Viewers effort. The net effect is then 30 percent of 30 percent, or a 10 percent rework overall.

- DECwrite

  DECwrite is the application most heavily based on DECwindows. Changes to DECwindows cost DECwrite approximately one person-year. The initial version of DECwrite took about 30 person-years, so the rework represents about 3 percent of the total product cost.

The following factors affected DECwrite:

- DECwrite was written to be portable, with the windowing environment isolated.
- Based on the original Motif Style Guide, the changes at first were staggering. The team analyzed changes required for minimum conformance and full conformance. The estimate reflects changes to bring DECwrite to minimum conformance.

- Paint

  Paint is an out-of-the-box DECwindows application. Converting Paint took approximately six person-months of effort.

C.4 Cost Summary

The following table shows the net effect of reengineering for about 30 percent change from DECwindows to DECwindows Motif.

Component	Total	Percent Rework
DECwindows	15-20 person-years	30%
VMS and ULTRIX systems	2-3 person-years	To be determined
CDA Viewer	2-6 person-months	10%
DECwrite	about 1 person-year	3%[1]
Paint	about 6 person-months	To be determined
	————————	
TOTAL	about 20 person-years	

[1]Multiply this number by the number of applications (about 30) for a global reengineering cost.

There is no current way to assess the impact to custom projects business.

The conversion of DECwindows to DECwindows Motif was considered a win for Digital. If the DECwindows API had not been accepted by the OSF, Digital would eventually have had to abandon DECwindows, adopt the emerging standard, and potentially abandon all applications based on DECwindows after a costly period of migration to the new standard.

D

Input and Return from Standardization

This appendix describes the differences in input and return between the Open Software Foundation (OSF) and the Object Management Group (OMG).

For more information on determining standardization return, see Chapter 6.

Figures D–1 and D–2 show the different transaction flows between OSF and OMG. Table D–1 compares some of the key differences.

Figure D–1 OSF Input and Return

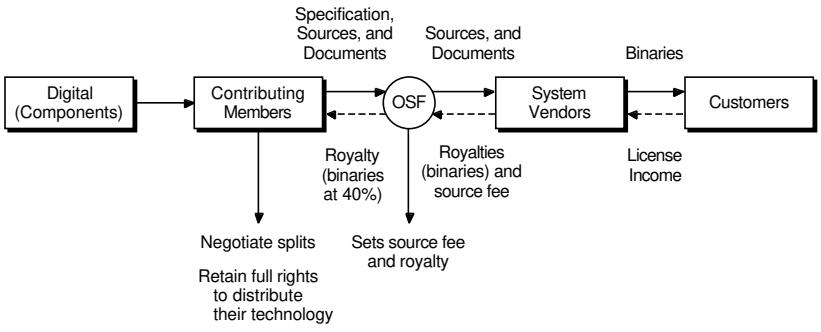

Figure D–2 OMG Input and Return

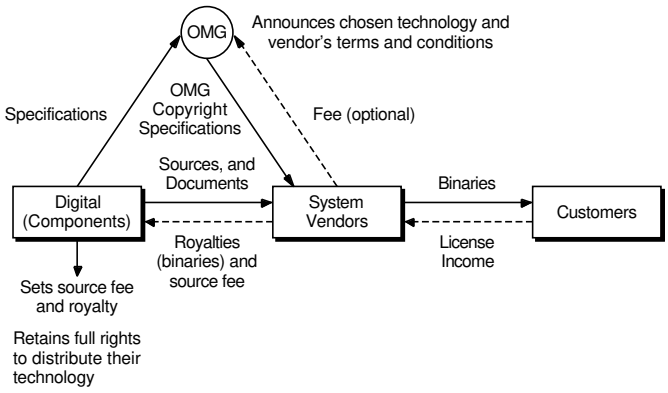

Table D–1 Key Differences in OSF and OMG Transaction Flow

Comparison Factor	OSF	OMG
Submission	Usually a partnership with another company. For example, both Digital and Hewlett-Packard submitted components for DCE.	Submissions from the industry at large, creating less incentive for partnerships and alliances.
Ownership of technology	Contributing OSF members retain full rights to distribute their technology.	Submitting companies retain full rights to distribute their technology.
Source fees and royalties	OSF sets source fees and royalties. Source fees are paid to the OSF; contributing companies receive only royalties.	The submitting companies set and receive source fees and royalties. OMG announces the chosen technology and the vendor's price (terms and conditions).

(continued on next page)

Table D–1 (Cont.) Key Differences in OSF and OMG Transaction Flow

Comparison Factor	OSF	OMG
Input	OSF receives specifications, sources, and documents.	OMG receives only specifications, not sources and documents. OMG copyrights the specifications for distribution to system vendors, who in turn, are optionally charged a fee. System vendors receive sources and documents at a fee determined by the contributing companies.

Glossary of Abbreviations and Definitions

G.1 Abbreviations

Abbreviations are very common in the standards world. Table 1 is a quick reference for many of the abbreviations you might encounter. See Section G.2 for definitions of standardization terms used in this document.

Table 1 Glossary of Abbreviations

Abbreviation	Expansion
ABI	Application Binary Interface
ACE	Advanced Computing Environment
AEP	Application Environment Profile
AES	Application Environment Specification
AFNOR	Association Français de Normalisation
AIIA	Australian Information Industry Association
ANDF	Architecture Neutral Distribution Format
ANS	American National Standard
ANSI	American National Standards Institute
AOW	Asia-Oceania Workshop
API	Application Programming Interface
APP	Applications Portability Profile
APTL	Accredited POSIX Testing Laboratory
ASC	Accredited Standards Committee
ATIS	A Tools Integration Standard

(continued on next page)

Table 1 (Cont.) Glossary of Abbreviations

Abbreviation	Expansion
AUSTEL	Australian Telecommunications Authority
BSI	British Standards Institution
CAE	Common Application Environment
CALS	Computer-Aided Logistics Support
CASE	Computer-Aided Software Engineering
CBEMA	Computer and Business Equipment Manufacturers Association
CBTA	Canadian Business Telecommunications Affiliation
CCIR	Comité Consultatif International des Radiocommunications
CCITT	Comité Consultatif International de Télégraphique et Téléphonique
CCTA	Central Computer and Telecommunications Agency
CD	ISO Committee Draft
CDN ISDN	Canadian Integrated Services Digital Network
CEC	Commission of the European Communities
CECUA	Confederation of European Computer User Associations
CEN	Comité Européen de Normalisation
CENELEC	Comité Européen de Normalisation Electrotechnique
CEPT	Conférence Européen des Administrations des Postes et des Télécommunications
CIGOS	Canadian Interest Group on Open Systems
CIM	Computer Integrated Manufacturing
CIS	CASE Integration Services
COS	Corporation for Open Systems
COSINE	Corporation for Open Systems Interconnection Networking in Europe
CPS&R	Corporate Product Safety and Regulations
CSA	Canadian Standards Association
CSAC	Corporate Standards and Consortia
CSBTS	China State Bureau of Technical Supervision

(continued on next page)

Table 1 (Cont.) Glossary of Abbreviations

Abbreviation	Expansion
CSL	Computer Systems Laboratory
CSSC	Corporate Standardization Steering Committee
CUE	Corporation for UNIX Europe
DCE	Distributed Computing Environment
DIN	Deutsches Institut für Normung e.V.
DIS	ISO Draft International Standard
DISC	Delivering Information Solutions to Customers through international standardization
DME	Distributed Management Environment
DNS	Distributed Name Service
DOMTF	Domains Task Force
EC	European Commission European Community
ECITC	European Committee for IT Testing and Certification
ECMA	European Computer Manufacturers' Association
ECTEL	European Telecommunications and Professional Electronics Industry
EDI	Electronic Data Interchange
EDICA	EDI Council of Australia
EDIFACT	EDI for FIPS Administration, Commerce, and Trade
EEC	European Economic Community
EFTA	European Free Trade Association
EIA	Electronic Industries Association
EMCIT	European Testing of Electromagnetic Compatibility of Information Technology Products
EMUG	European MAP Users' Group
EN	Norme Européene (European standard)
ENV	Pré-Norme Européene (European prestandard)

(continued on next page)

Table 1 (Cont.) Glossary of Abbreviations

Abbreviation	Expansion
ESPRIT	European Strategic Programme for Research in Information Technology
ETCOM	European Testing and Certification for Office and Manufacturing Protocols
ETIS	European Telecommunications Informatics Services
ETS	European Telecommunications Standards
ETSI	European Telecommunications Standards Institute
EurOpen	European Forum for Open Systems
EurOSInet	European Open System Interconnection Association
EWOS	European Workshop on Open Systems
FIMS	Forms Interface Management Standard
FIPS	Federal Information Processing Standard
GKS	Graphical Kernel System
GOSIP	Government Open System Interconnection Profile
IEC	International Electrotechnical Commission International Electrotechnical Committee
IEEE	Institute of Electrical and Electronics Engineers
IFRB	International Frequency Registration Board
INTAP	Interoperability Technology Association for Information Processing
IPSIT	International Public Sector Information Technology Group
IPSJ/ITSCJ	Information Processing Society of Japan/Information Technology Standardization Commission of Japan
IS	ISO International Standard
ISDN	Integrated Services Digital Network
ISIS	Internal Standards, Information, and Services
ISO	International Organization for Standardization
ISO CD	ISO Committee Draft
ISO DIS	ISO Draft International Standard

(continued on next page)

Table 1 (Cont.) Glossary of Abbreviations

Abbreviation	Expansion
ISO IS	ISO International Standard
ISO NP	ISO New Work Item Proposal
ISO WD	ISO Working Draft
ISP	International Standardized Profile
ISOTF	ISO Task Force
ISTF	International Studies Task Force
IT	Information Technology
ITRC	Information Technology Requirements Council
ITSCJ	Information Technology Standardization Commission of Japan
ITSTC	Information Technology Steering Committee
ITU	International Telecommunications Union
JISC	Japanese Industrial Standards Committee
JTAP	Joint Technical Advisory Program
JTC 1	Joint Technical Committee 1
MAP	Manufacturing Automation Protocol
MIA	Multivendor Integration Architecture
MITI	Ministry for International Trade and Industry
MSC	Microcomputer Steering Committee
NAMAS	National Measurement Accreditation Service
NATA	National Association of Testing Authorities of Australia
NCSL	NIST Computer Systems Laboratory
NIST	National Institute of Standards and Technology
NMF	Network Management Foundation
NP	ISO New Work Item Proposal
NSAI	National Standards Authority of Ireland
NVLAP	National Voluntary Laboratory Accreditation Program
ODA	Open Document Architecture

(continued on next page)

Table 1 (Cont.) Glossary of Abbreviations

Abbreviation	Expansion
ODAC	Open Document Architecture Consortium
ODIF	Open Document Interchange Format
OIW	OSI Implementors' Workshop
OMG	Object Management Group
OSETF	Open System Environment Task Force
OSF	Open Software Foundation
OSI	Open Systems Interconnection
OSIA	Open Systems Interconnection Association
OSITOP	European OSI TOP User's Group
OSTC	Open Systems Testing Consortium
PAR	Project Activity Request
PCTE	Portable Common Tool Environment
PCTS	POSIX Conformance Test Suite(s)
pdISP	Proposed Draft International Standards Profile
PHIGS	Programmer's Hierarchical Interactive Graphics System
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Information eXtra Information for Testing
PMC	Program Management Committee
POMD	Prospectus of Market Demand
POSI	Promoting Conference for Open Systems Interconnection
POSIX	Portable Operating System Interface for Computer Environments
PSETF	Public Sector Task Force
PTT	Postal, Telephone, and Telegraph
QALTF	Quality Task Force
RARE	Reseaux Associes pour la Recherche Europeenne
RFT	Request for Technology
SA	Standards Australia

(continued on next page)

Table 1 (Cont.) Glossary of Abbreviations

Abbreviation	Expansion
SAB	Standards Activity Board
SANZ	Standards Association of New Zealand
SC	Subcommittee
SDO	Standards Developing Organization
SEC	Sponsor Executive Committee
SFIB	Syndicat national des Fabricants d'ensembles d'Informatique de Bureautique et de leurs applications télématiques
SGFS	Special Group on Functional Standards
SGML	Standard Generalized Markup Language
SMC	Standards and Methods Control
SPAG	Standards Promotion and Application Group
SPARC	Standards Planning and Requirements Committee
SPMC	Standard Program Management Committee
SSC	Strategic Standards Committee
SVID	System V Interface Definition
TAG	Technical Advisory Group
TC	Technical Committee
TCOS	Technical Committee on Operating Systems
TCP/IP	Terminal Control Protocol/Interchange Protocol
TOP	Technical and Office Protocol
UI	UNIX International, Incorporated
UNINFO	UNI-Information Technology
USL	UNIX System Laboratories
VSX	Verification Suite for X/Open
WD	ISO Working Draft
WG	Working Group
XNET	X/Open Networking working group

(continued on next page)

Table 1 (Cont.) Glossary of Abbreviations

Abbreviation	Expansion
XPG	*X/Open Portability Guide*
XTI	X/Open Transport Interface

G.2 Definitions

This glossary contains definitions of standardization terms used in this document. For a quick reference for abbreviations, see Section G.1.

accreditation

The administrative act of recognizing that a test laboratory is qualified to conduct protocol testing and that the laboratory's testing methods meet specific technical criteria.

Accredited Standards Committee (ASC)

A United States standards committee of ANSI.

American National Standard (ANS)

An ANSI standard.

American National Standards Institute (ANSI)

United States member of ISO that compiles and publishes industry standards.

Application Environment Specification (AES)

The OSF document definition for interface and standards specification.

Application Programming Interface (API)

Language and subroutine call.

Applications Portability Profile (APP)

NIST environment for application portability.

Architecture Neutral Distribution Format (ANDF)

A single software distribution format that is architecture-neutral and enabling portability; hardware and software are truly separated. An alternative to current distribution techniques that require a separate format for each hardware architecture. Enables distribution of mass market software (word processors, spreadsheets, database management systems, and others) into the open systems marketplace.

Asia-Oceania Workshop (AOW)

An Asian and Oceania consortia whose focus is OSI functional standards.

Association Français de Normalisation (AFNOR)

ISO member body for France.

A Tools Integration Standard (ATIS)

A set of object-oriented extensions to repository standards that will soon be implemented in CDD/Repository. The API interface tool used for the Atherton CASE environment. CASE Integration Services (CIS) was formed to market ATIS, but has since expanded its scope.

British Standards Institution (BSI)

ISO member body for the United Kingdom.

Canadian Standards Association (CSA)

National body for standardization IT in Canada.

Canadian Interest Group on Open Systems (CIGOS)

Canadian group whose mission is to accelerate the development of open systems and OSI-based IT products and services.

CASE Integration Services (CIS)

A standards committee formed to develop a standard interface for integrating software engineering tools into CASE environments.

Central Computer and Telecommunications Agency (CCTA)

The procurement and specification branch of the government of the United Kingdom. It was the originator of GOSIP.

certification

The administrative task of awarding a product a certificate if it passes the conformance testing. The criteria for being certified involves adequate testing by a laboratory that is considered competent and impartial. The certification process adds a level of confidence above that provided by compliance.

Comité Consultatif International des Radiocommunications (CCIR)

A permanent committee assigned to the ITU.

Comité Consultatif International de Télégraphique et Téléphonique (CCITT)

An international organization that compiles and publishes electronic communication standards. A committee of ITU.

Comité Européen de Normalisation (CEN)

A European committee for standardization that writes European regulatory standards that are required by law. CEN has standards for software and hardware. CEN is a liason to the ISO. CEN and CENELEC are separate, but have joint committees. One joint committee is equivalent to the ISO/IEC JTC 1.

Comité Européen de Normalisation Electrotechnique (CENELEC)

A European committee for electrotechnical standardization. CENELEC is a liaison to the ISO. CEN and CENELEC are separate, but have joint committees.

Commission of the European Communities (CEC)

The common market business commission. One institution of the EEC that applies to civil service. Not a standardization body and does not produce standards.

Common Application Environment (CAE)

A collection of X/Open-endorsed application programming interfaces described in the *X/Open Portability Guide*. CAE defines programming interfaces to a rich set of application services. Applications that use the interfaces defined by CAE are guaranteed a high degree of source code portability across X/Open conformant systems.

compliance

The capability for a standard or specification to be in line with another standard. For example, the OSI Transport Protocol complies with the *OSI Reference Manual*.

Computer-Aided Logistics Support (CALS)

A United States Department of Defense program for electronic exchange. NIST is involved in CALS.

Computer-Aided Software Engineering (CASE)

The methods, tools, training, and services required to support automated engineering processes of software production.

Computer and Business Equipment Manufacturers Association (CBEMA)

A trade association that represents the information processing, communications, and business products sector of industry.

Computer Society

The largest society of the IEEE. The sponsoring body of IEEE's information technology standards work.

Computer Systems Laboratory (CSL)

That part of NIST responsible for the development and maintenance of information technology standards for federal users.

conformance

The capability for a product to implement (at least) the mandatory features of the standard and to work as described in the standard.

conformance testing

The technical task of testing products to decide whether or not they conform to the standard. The tests are often done by the supplier of the product or an independent group.

consortium

An association or partnership of companies, vendors, or users who are united with a common cause that requires extensive resources. Includes groups such as the OSF and X/Open.

Corporate Product Safety and Regulations (CPS&R)

The Digital internal group that is responsible for ensuring that Digital provides safe products, meets legally mandated product safety requirements, and minimizes product safety liability.

Corporate Standards and Consortia (CSAC) group

The organization within Digital that coordinates standards and open systems issues throughout the corporation.

Corporation for Open Systems (COS)

A user and vendor consortium whose mission is to accelerate the introduction of OSI/ISDN (Open Systems Interconnect/Integrated Services Digital Network) products based on international standards.

COS Mark

A certification mark issued by the Corporation for Open Systems (COS).

de facto standard

A term applied to a product or system that has captured a large market share, and that other providers tend to emulate, copy, or use to obtain some of that market share. De facto standards occur when the market believes that the solution provided by a single provider is superior to anything else on the market. De facto standards can be either open or proprietary, but they can be changed at the option of the originating provider. MS–DOS, PostScript, and NFS are de facto standards. See also *de jure standard*.

de jure standard

A standard created by a formally recognized Standards Developing Organization (SDO) (developed under the rules of consensus in an open forum) in which everyone has a chance to participate. The Open Systems Interconnect (OSI), Ethernet, and POSIX, and most language standards are examples of this type of standard. De jure standards cannot be changed without going through the consensus process, monitored by an SDO, in which everyone who wants to get involved can. ISO, CCITT, X3, IEEE, ANSI are accredited SDOs for de jure standards. See also *de facto standard*.

Deutsches Institut für Normung e.V. (DIN)

German institute for standards. ISO member body.

Domains Task Force (DOMTF)

A Digital task force devoted to the discussion of standards issues in the hardware domains.

EDI for Administration, Commerce, and Trade (EDIFACT)

An organization sponsored by the United Nations for developing Electronic Data Interchange (EDI) standards.

Electronic Data Interchange (EDI)

A service that lets business firms exchange structured documents, such as purchase orders and price lists, between a business enterprise and its vendors, customers, and other trading partners.

European Commission (EC)

An administrative organization for the European Community. EC refers to both the European Commission and the European Community.

European Community (EC)

European governments and ministers of member states. EC refers to both the European Community and the European Commission.

European Computer Manufacturers Association (ECMA)

A European standards development committee whose mission is to increase the use of information technology products, especially those of European manufacture; to standardize these products; and to promote those standards.

European Economic Community (EEC)

The economic branch of the European Community.

European Free Trade Association (EFTA)

An association of EEC countries and the Nordic countries (Sweden, Finland, Norway) and Switzerland.

European MAP User's Group (EMUG)

Provides input to Manufacturing Automation Protocol (MAP) activity in the United States.

European Norm (EN)

A European standard published by CEN/CENELEC. The EN takes precedence over national standards for the EEC countries and is mandatory for public procurement.

European Norm Vor (ENV)

The draft version of a European Norm (EN). A prestandard that must be revised within three years. The EN or ENV is mandatory for public procurement. See also *European Norm (EN)*.

European OSI TOP User's Group (OSITOP)

A European association coordinating efforts in the OSI Technical and Office Protocol (TOP) area. OSITOP provides input for TOP activity in the United States.

European Telecommunications and Professional Electronics Industry (ECTEL)

A study group for CEPT that includes a working group for specifications of telecommunications terminal equipment.

European Telecommunications Standards (ETS)

European telecommunications standards created by the European Telecommunications Standards Institute.

European Telecommunications Standards Institute (ETSI)

A newly created European standards body for telecommunications standards creation and consistency.

European Workshop on Open Systems (EWOS)

An organization that brings together suppliers, users, procurers, government, standards bodies, and academia to provide input to CEN/CENELEC and ISO for development of international standards profiles (ISPs) for open systems.

European Forum for Open Systems (EurOpen)

An international federation of UNIX and open systems user organizations.

Federal Information Processing Standard (FIPS)

A means by which the United States government codifies specifications or adopts industry standards as standards for federal users. FIPS are usually modified to meet specific federal user needs and can come from other accredited and nonaccredited bodies. FIPS cover areas such as windowing, POSIX, certification, languages, peripheral devices, and communications. Customers in the private sector can use FIPS rather than invent their own standards, thus taking advantage of the government's investment in testing and certification.

Forms Interface Management Standard (FIMS)

ISO and CODASYL project for forms management.

Government OSI Profile (GOSIP)

Standard profiles that are based on national and international base protocol standards.

Graphical Kernel System (GKS)

An ISO/ANSI standard for a two-dimensional graphics API. A three-dimensional standard is in development.

homologation standard

A standard that applies to the safety of a network.

Independent Software Vendors Council (ISV Council)

A group established by X/Open to bring the views of the international software development community to the open systems market, and specifically to hardware vendors.

Information Processing Society of Japan/Information Technology Standardization Commission of Japan (IPSJ/ITSCJ)

The Japanese national body of ISO/IEC JTC 1. It covers standards on character code sets, programming languages, OSI upper layers, optical disks, and I/O interface.

Information Technology Standardization Commission of Japan (ITSCJ)

The Japanese national body of ISO/IEC JTC 1. It covers standards on character code sets, programming languages, OSI upper layers, optical disks, and I/O interface.

Information Technology Steering Committee (ITSTC)

A steering committee for information technology standards that coordinates the activities of the European Telecommunications Standards Institute (ETSI) and CEN/CENELEC.

Institute of Electrical and Electronics Engineers (IEEE)

A formal ANSI-accredited standards-developing organization. IEEE standards include the 802.x local area network and POSIX 1003.x efforts and standards such as uniform electrical code, microwave communications, bus standards, and others. See also *Computer Society*.

Internal Standards, Information, and Services (ISIS) group

The Digital organization responsible for Digital internal standards. ISIS consists of three subgroups: Standards and Methods Control (SMC), Chief Engineer's Office (CEO), and Corporate Product Safety and Regulations (CPS&R).

International Electrotechnical Commission (IEC)

An international group whose focus is electrical standards.

International Organization for Standardization (ISO)

An organization that compiles and publishes international industry standards.

International Standardized Profile (ISP)

A set of internationally harmonized profiles that build on base standards and make appropriate choices to provide a specific set of functions.

International Telecommunications Union (ITU)

International organization of telecommunications providers, now a special agency of the United Nations (UN).

interoperability

The ability of computers from many different vendors to work together.

Interoperability Technology Association for Information Processing (INTAP)

An Asian group whose focus is interoperability.

ISO Committee Draft (CD)

A draft of a proposed international standard that is in stage 3 of the ISO standards process. CD replaces the older term DP.

ISO Draft International Standard (DIS)

A draft of a proposed international standard that is in stage 4 in the ISO standards process.

ISO International Standard (IS)

A draft of a proposed international standard that is in stage 5 in the ISO standards process — a formal approved ISO standard.

ISO New Work Item Proposal (NP)

A draft of a proposed international standard that is in stage 1 in the ISO standards process.

ISO Working Draft (WD)

A draft of a proposed international standard that is in stage 2 in the ISO standards process.

ISV Council

See *Independent Software Vendors Council*.

Japanese Industrial Standards Committee (JISC)

ISO member body for Japan.

Joint Technical Committee 1 (JTC 1)

A joint ISO and IEC technical committee formed in 1987 and concerned with information technology. Also the United States ANSI committee formed to work on ISO/IEC JTC 1 matters.

Manufacturing Automation Protocol (MAP)

Early OSI users group for OSI profile development.

Motif

See *OSF/Motif*.

National Association of Testing Authorities of Australia (NATA)

An association that accredits testing laboratores and has links with NVLAP of the United States and NAMAS of the United Kingdom.

National Institute of Standards and Technology (NIST)

A United States government organization responsible for research, development, and maintenance of standards and other technologies for federal use.

National Measurement Accreditation Service (NAMAS)

An accredited testing laboratory in the United Kingdom for UK GOSIP approved testing.

National Standards Authority of Ireland (NSAI)

ISO member body for Ireland.

National Voluntary Laboratory Accreditation Program (NVLAP)

A component of NIST that accredits laboratories for certification testing in the United States.

Object Management Group (OMG)

An international organization of software engineers, computer system vendors, and software application users focused on developing standards and guidelines for implementing object-oriented (OO) systems and programming. Digital is a corporate member.

Open Document Architecture (ODA)

The area of office document architecture. Also the International Standard (ISO 8613) for office document architecture.

Open Document Architecture Consortium (ODAC)

A vendor consortium working on a toolkit for open systems that is based on the ODA standard.

Open Document Interchange Format (ODIF)

An ISO standard; part of ODA.

Open Software Foundation (OSF)

A nonprofit corporation founded by Digital and six other leading systems vendors to develop a set of specifications (the Application Environment Specification (AES)) for an open software environment; also to license a source code implementation that conforms to those specifications. OSF membership and licensing is open to anyone, including hardware vendors, software vendors, users, and research and university organizations.

open specification

A public specification that is maintained by an open public consensus process to accommodate new technologies over time, and that is consistent with international standards. Source: IEEE P1003.0.

open system

A system that implements sufficient open specifications for interfaces, services, and supporting formats to enable properly engineered applications software to be ported across a wide range of systems (with minimal changes), to interoperate with other applications on local and remote systems, and to interact with users in a style that facilitates user portability. Source: IEEE P1003.0.

Open System Environment Task Force (OSETF)

A Digital task force devoted to the discussion of standards issues.

Open Systems Interconnection (OSI)

A suite of ISO standards for networking protocols. The OSI Reference Model has seven layers that define protocols for physical transmission of data, as well as the structuring and organization of data so that it can be sent and received in a meaningful form.

OSF/1

A reference model operating system produced by the Open Software Foundation, and incorporating technology chosen by Requests for Technology (RFTs) issued to all interested parties. OSF/1 is a combination of the best features of the current UNIX systems. OSF/1 is the Open Software Foundation's technology offering for the operating system component (OSC) of an open systems environment.

There are three components of OSF/1:

- Specification, called the Application Environment Specification (AES)
- Validation suite
- Implementation

OSF/Motif

The OSF user interface consisting of an API, an implementation method, and a standard look and feel. A combination of Digital, Hewlett-Packard, and Microsoft technology.

performance testing

The technical task of testing products to decide whether or not an implementation satisfies the performance criteria of the user.

portability

The ability for application software to run on computers of many different types.

Portable Common Tool Environment (PCTE)

A CASE standard in Europe similar to ATIS. Tools in Europe are being built for PCTE only. Digital is doing both PCTE and ATIS development. An ECMA and ESPRIT project. ECMA has a PCTE standard.

Portable Operating System Interface (POSIX)

A set of API standards being developed by the Institute of Electrical and Electronic Engineers (IEEE) for providing a common operating system interface. The formal standards activity is known as the IEEE-TCOS-SS. This is an open forum where anyone can participate.

POSIX Conformance Test Suite (PCTS)

A test suite available from NIST and other sources for testing conformance to POSIX.

Postal, Telephone, and Telegraph (PTT)

A national organization in most countries other than the United States that is in charge of postal, telephone, and telegraph services.

Program Management Committee (PMC)

A subcommittee of the Sponsor Executive Committee of IEEE TCOS-SS that monitors activities in the working groups.

Programmer's Hierarchical Interactive Graphics System (PHIGS)

An ANSI/ISO standard API for device-independent three-dimensional graphics programming interfaces.

Project Activity Request (PAR)

The document used to obtain approval from the Standards Activity Board (SAB) of the IEEE for a work item. An IEEE working group must have at least one approved PAR. The PAR provides information on vendors and users, scope, and other activities. The SAB reviews PARs and assigns them to an IEEE working group.

Promoting Conference for Open Systems Interconnection (POSI)

A Japanese OSI networking standard group that develops OSI profiles and international conformance testing.

proprietary standard

A term that identifies an industry-recognized product or system that has significant market presence, and against which other things are compared. This standard is the proprietary property of a provider and is not available without permission of the provider. Control of the contents is the right of the owner. The VMS and UNIX systems are examples of proprietary standards.

Prospectus of Market Demand (POMD)

An X/Open market study document that communicates X/Open's directions for open systems.

regulatory standard

A standard that must be implemented before a product can be offered for sale. In the IT industry, regulatory standards are confined to safety standards, environmental standards, and homologation (safety to the network) standards. Violation of these standards usually has a specific legal sanction involved.

Request for Technology (RFT)

The OSF vehicle for evaluating and selecting technologies that may become part of the OSF technology offerings.

SCx

Subcommittee x of the ISO.

secretariat

An organization that provides on-going administrative support and, in some cases, funding or legal support for a volunteer standards effort. ANSI serves as the secretariat to JTC 1, SC21, and some other efforts; CBEMA serves as secretariat to ASC X3 and JTC 1 TAG; IEEE serves as secretariat for SC7; and Digital serves as secretariat for SC22/WG15 and SC22/WG18.

Special Group on Functional Standards (SGFS)

A JTC 1 group created to work with functional standards and to advise JTC 1 on the issues of International Standardized Profiles (ISPs).

specification

A description of hardware and software functionality written by any group or organization, such as the Digital CDA specifications. A specification is not a formal standard.

Sponsor Executive Committee (SEC)

An administrative committee for the IEEE Computer Society standards subcommittees that typically administers 5 to 30 working groups.

standard

A clearly defined and agreed-upon convention. Standards can be proprietary (used only within the environment provided by a single computer vendor), public (widely used across a variety of vendor equipment), or formal (developed and coded by a standards organization such as ANSI or ISO).

Standard Generalized Markup Language (SGML)

An application-, system-, and device-independent language for marking the structural content of text. An ISO standard.

Standards Activity Board (SAB)

A group within the IEEE that reviews Project Activity Requests (PARs) and assigns them to an IEEE working group.

Standards and Methods Control (SMC)

The organization within Digital responsible for Digital internal standards and waivers processes, and for the policies and standards associated with those processes.

Standards Australia (SA)

The national standards body of Australia that develops national Australian standards for every field of interest. SA represents Australia in international standards bodies, such as the ISO and IEC.

Standards Council of Canada

Member body to ISO in Canada.

Standards Developing Organization (SDO)

A formal international or national organization concerned with developing standards.

Standards Planning and Requirements Committee (SPARC)

An ASC X3 committee that evaluates proposed standards projects to see how they fit within the scope of X3.

Standards Promotion and Application Group (SPAG)

A European vendor consortium founded to help formulate a European information technology standards policy, and now involved in systems interoperability.

System V Interface Definition (SVID)

Specification for AT&T/USL UNIX System V.

Technical Advisory Group (TAG)

United States groups that define the United States position and delegation to ISO/IEC standards activities.

Technical and Office Protocol (TOP)

Early OSI users group.

Technical Committee for Operating Systems (TCOS-SS)

A committee of the IEEE Computer Society concerned with standards 1003 and 1201. TCOS-SS sponsors POSIX.

technical market standard

A standard created in response to a market need or market requirement. The use of these standards is optional with the provider.

Terminal Control Protocol/Interchange Protocol (TCP/IP)

Defense Data Network (DDN) protocols developed by the Advanced Research Projects Agency (ARPA), and used heavily by the ARPA network as well as in the UNIX community.

UNI-Information Technology (UNINFO)

ISO member body for Italy.

UNIX International, Incorporated (UI)

A lobbying group for AT&T. An international consortia of UNIX users for promotion of UNIX System V.

UNIX System Laboratory (USL)

An AT&T unit responsible for UNIX development.

WGx

Working Group x of a subcommittee (SCx) of ISO. Each subcommittee has a WG1 concerned with definitions. SC22/WG15 is concerned with open system interfaces (POSIX) and has a delegation from each country.

X3 standards

A committee authorized by ANSI to develop information technology standards. Voting is by corporation.

X Consortium

A consortium sponsored by M.I.T. for the promotion of the X Window System.

X/Open

An international consortium of system hardware vendors who wish to define specifications for an open systems application environment (defined in the X/Open Common Applications Environment (CAE)). X/Open publishes its specifications in a series of volumes called the *X/Open Portability Guide*.

X/Open Networking working group (XNET)

A working group of X/Open that initiates, oversees, and sometimes implements all network activity in X/Open.

***X/Open Portability Guide* (XPG)**

A document produced by X/Open that contains its specifications for open systems. XPGx is Version x of the *X/Open Portability Guide*.

X protocol

A low-level communication standard for client application and server software to make requests and deliver requests for window manipulation under the X Window System.

X Window System

A de facto industry standard developed by M.I.T. It is a specification for device-independent windowing operations on bit-mapped display devices.

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